DELTA DESIGN INC.

5900

INSTRUCTION MANUAL

DELTA DESIGN, INC.
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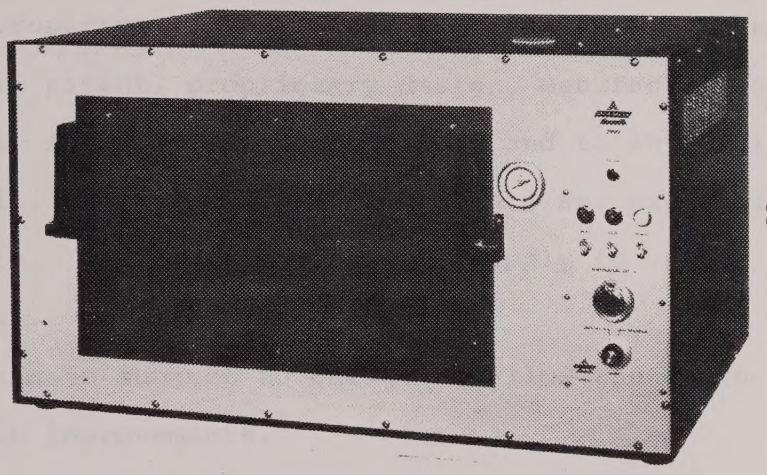
INSTRUCTION MANUAL
Model 5900



DELTA DESIGN INC.

ENVIRONMENTAL TEST CHAMBER

ENVIRONMENTAL CONTROL EQUIPMENT FOR RESEARCH AND INDUSTRY
5775 KEARNY VILLA ROAD • SAN DIEGO, CALIFORNIA 92123

5900-1080

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SPECIFICATIONS

TEST VOLUME (H x W x D)	11 x 19-1/2" x 15" (27.94 x 49.53 x 38.10 Cm)
AIR CIRCULATION	Two 140 CFM centrifugal blowers with baffling to provide equal distribution throughout the chamber in a horizontal air flow pattern.
OUTSIDE CASE DIMENSIONS (H x W x D)	17-1/4" x 32" x 25" (43.82 x 81.28 x 63.50 Cm)
INNER LINER	Type 302-304 Stainless Steel
OUTER CASE	Aluminum
INSULATION	Fiberglas
WEIGHT	90 Lbs. (40.82 Kg)
POWER REQUIREMENTS	120 VAC, 50/60 Hz Single Phase, 20 Amps or 240 VAC, 50/60 Hz, Single Phase, 15 Amps.
CONTROLS	POWER On-Off Switch and Light COOL On-Off Switch and Light HEAT On-Off Switch and Light TEMPERATURE SET Control MANUAL/PROGRAM Control Switch (MODE)
HEATING ELEMENTS	Four 8.75 Ohm Elements, Total of 1775 Watts, Nichrome Wire
COOLING	Liquid Carbon Dioxide (LCO_2) or Liquid Nitrogen (LN_2)
PROGRAMMING	Programmable
COOL DOWN TIME	Ambient to $-54^{\circ}C$ in 7 minutes
HEAT UP TIME	Ambient to $+217^{\circ}C$ in 20 minutes
TEMPERATURE RANGE	$-73^{\circ}C$ to $+315^{\circ}C$
RESETTABILITY	$\pm 0.25^{\circ}C$

TEMPERATURE DEVIATION	$\pm 0.1^{\circ}C$
LINE VOLTAGE STABILIZATION	$\pm 0.25^{\circ}C$ for 105 to 125 VAC Line Voltage Change $\pm 0.25^{\circ}C$ for 220 to 240 VAC Line Voltage Change
AMBIENT TEMPERATURE COMPENSATION	$\pm 0.02^{\circ}C/C^{\circ}$
GRADIENTS IN TEST AREA	(2" from walls in corners and in the center of the test area): $\pm 0.75/100^{\circ}C$ difference measured from ambient.

NOTE: IT IS RECOMMENDED THAT THIS MANUAL BE READ THOROUGHLY BEFORE CONNECTING EQUIPMENT TO ELECTRICAL POWER SOURCE.

INTRODUCTION

This Delta Design, Inc. Chamber is a precision environmental test chamber capable of attaining temperatures from -73°C to +315°C with a minimal temperatures deviation of ±0.1°C.

Temperature control in this chamber is by means of Delta's Solid State Controller, which can be operated manually or thru an external programmer.

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1 PRECAUTIONS

1.1 Connect SAFETY PLUG (rear of chamber) when external programmer is not being used. This will preclude any accidental high temperature being obtained if the MODE switch is placed in the PROGRAM position with no programmer connected.

1.2 Ground the case of the chamber to earth ground. When a grounded outlet is not available, use the three-to-two adaptor and connect the green colored "pigtail" to earth ground. The chamber must not be operated without the case grounded.

1.3 Unplug the chamber from all sources of power before attempting any type of servicing or removal of the controller chassis. The case of the SCR Switch assembly, located on the controller sub-assembly, is at power line potential and extreme care in servicing or calibration must be exercised.

1.4 Do not block the right side of chamber or outlet of controller area on bottom of the chamber (right side) for controller cooling purposes.

1.5 Ensure that the correct type of LCO_2 (liquid carbon dioxide) source is connected to the chamber before operating at low temperature. Recommend standard 50 pound capacity high dry siphon LCO_2 supply. Test the LCO_2 for cleanliness by discharging a quantity of it through a clean white handkerchief. Bits of rust and traces of oil, ice or water indicate contaminated LCO_2 which should not be used.

1.6 Operate the chamber at a temperature of 200°C for an hour after prolonged operation at low temperatures. This restores the efficiency of the insulating material by driving out the moisture which has been condensed out of the air.

CAUTION

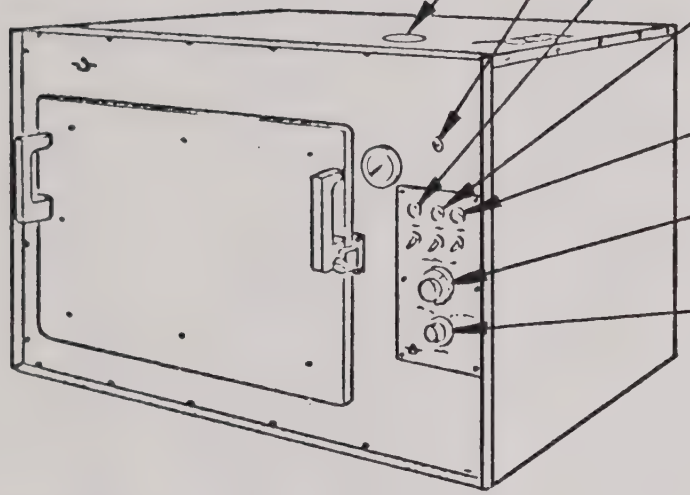
Liquid oxygen may be formed in the insulation when the chamber is operated at low temperatures. Any mixture of oil and liquid oxygen can be explosive. If oil contamination is suspected, bake the chamber out by operating it at a temperature of 200°C for a period of three hours before taking it to extremely low temperatures.

1.7 Do not leave liquid nitrogen trapped in a line (valves closed at both ends) as high pressures will be developed as the liquid absorbs heat and becomes gas.

5900-0974

FAILSAFE ADJUST- LOCATED ON TOP OF CHAMBER. TURN TO CHANGE TEMPERATURE AT WHICH FAILSAFE WILL TRIP CAUTION: DO NOT LOWER FAILSAFE TEMP. SETTING UNLESS HEAT SW. IS ON & FAILSAFE IS OFF.

FAILSAFE LAMP- GLOWS RED WHEN FAILSAFE IS TRIPPED



THERMOMETER- INDICATES CHAMBER TEMP. IN TEST VOLUME.

OPERATING INSTRUCTIONS:

A. INSTALL THE CHAMBER, CONNECT POWER CORD TO SUITABLE OUTLET & COOLANT SUPPLY TO VALVE INLET.

B. FOLLOW STEPS 1 THRU 5.

(5) HEAT SWITCH & LIGHT-- SWITCH ON--ON POSITION ALLOWS CONTROLLER TO APPLY HEAT AUTOMATICALLY TO MAINTAIN SELECTED TEMPERATURE IN CHAMBER RED LIGHT IS ON STEADY WHEN CHAMBER IS HEATING, BLINKS WHEN CHAMBER REACHES SELECTED TEMPERATURE ABOVE AMBIENT

(4) COOL SWITCH & LIGHT--SWITCH ON--ON POSITION ALLOWS CONTROLLER TO APPLY COOLANT AUTOMATICALLY TO MAINTAIN SELECTED TEMPERATURE IN CHAMBER GREEN LIGHT IS ON STEADY WHEN CHAMBER IS COOLING.

(3) POWER SWITCH & LIGHT--SWITCH ON MAIN POWER ON. WHITE LIGHT GLOWS WHEN POWER IS ON.

(2) TEMPERATURE SET DIAL--SET TO DESIRED TEMPERATURE. SELECTS CHAMBER TEMPERATURE IF MODE SWITCH IS IN MANUAL POSITION.

(1) MODE SWITCH--SET TO MANUAL POSITION. ASSIGNS THE SELECTION OF CHAMBER TEMPERATURE TO TEMPERATURE SET DIAL OR EXTERNAL PROGRAMMER.

MANUAL POSITION: TEMPERATURE SET DIAL DETERMINES CHAMBER TEMPERATURE.

PROGRAM POSITION: PROGRAMMING RESISTANCE CONNECTED TO PROGRAM JACK AT REAR OF UNIT SELECTS CHAMBER TEMPERATURE.

CAUTION: ALWAYS CONNECT SAFETY PLUG (AT REAR OF CHAMBER) WHEN AN EXTERNAL PROGRAMMER IS NOT BEING USED

OPERATING INSTRUCTIONS
FIGURE 1

2 MODEL 5900 OPERATING INSTRUCTIONS

2.1 Installation - Top of unit must be clear for Failsafe adjustment.

2.2 Power Connection

2.2.1 Power connection should be an AC power source rated at 120 V- 20 amps - 50/60 Hz, or 240V - 15 amps - 50/60 Hz (240V option). The chamber must be connected to earth ground (green wire).

2.3 Liquid Coolant

2.3.1 Liquid Carbon Dioxide - 1050 psi system. A siphon type liquid CO_2 bottle is recommended.
2.3.1.1 Test the bottle by releasing a small amount of LCO_2 into a white handkerchief. Any brown stain indicates rust which would clog the filter and either freeze in the valve or clog the injector nozzle. Crack the LCO_2 valve open on the cylinder and notice the spray. It should be a dense, white cloud. It looks thin and gray when the tank is almost empty. An amost empty tank will not give proper cooling and should not be used. Connect the tank of LCO_2 to the rear of the chamber with the supplied high-pressure hose and fittings. Place a small amount of sealing compound on the threads of the male fitting to prevent leakage. DO NOT LET ANY SEALING COMPOUND GET INTO THE VALVE INLET ON THE REAR OF THE CHAMBER. Open the bottle and check for leaks which show as frosty spots on the hose or fittings.

2.3.2 Liquid Carbon Dioxide - 300 psi Low Pressure system.

2.3.2.1 When the in-plant use of liquid CO_2 exceeds approximately 1000 to 2000 pounds per month, a bulk liquid storage system can be installed to reduce the cost of coolant. Chambers being operated with this type of system have to be fitted with a different CO_2 valve and injector than used on a 1050 psi system. Contact Delta for information concerning valve replacement. If new chambers are ordered for use with a bulk storage 300 psi system, the fact should be stated on the order.

NOTE: The bulk storage system should be of the recirculating type if possible. If not, the supply should be located as close as possible

to the chamber to minimize gas formation in the supply line. This is particularly important in low volume usage systems as the insulation and fluid flow are the factors that prevent boiling of CO_2 in the supply line. Gaseous CO_2 is not an effective coolant.

2.3.2.2 All lines, valves and connecting hoses should be blown out before the chamber is connected. Water is very troublesome and is apparently inherent in some low-pressure refrigerated supplies. If lines are opened to bleed off excessive pressure at shutdown, close them to prevent contamination by condensed moisture. This will help to keep ice from forming in the control valve.

2.4 Liquid Nitrogen

CAUTION

Oxygen in the air surrounding the chamber inner liner and in the insulation can be liquified at low temperatures. This creates an oxygen rich atmosphere surrounding the heater area. The chamber tends to be self purging as the nitrogen replaces the usual atmosphere near the heaters. Any mixture of oil and liquid oxygen can be explosive so that extreme care must be used during operation at very low temperatures.

2.4.1 A 300 psi valve and stainless steel, polyurethane foam insulated, injector assembly is used for the liquid nitrogen applications. LCO_2 from a tank will not operate properly in a chamber equipped for LN_2.

2.4.2 Connect a liquid nitrogen liquid withdrawal container to the LN_2 input of the chamber with an insulated transfer line. A relief valve should be installed in the line with a relief pressure between 60 and 100 psi for a 2700 cubic foot 50 psi liquid withdrawal container.

2.5 SETTING THE DIAL TEMPERATURE INDICATOR

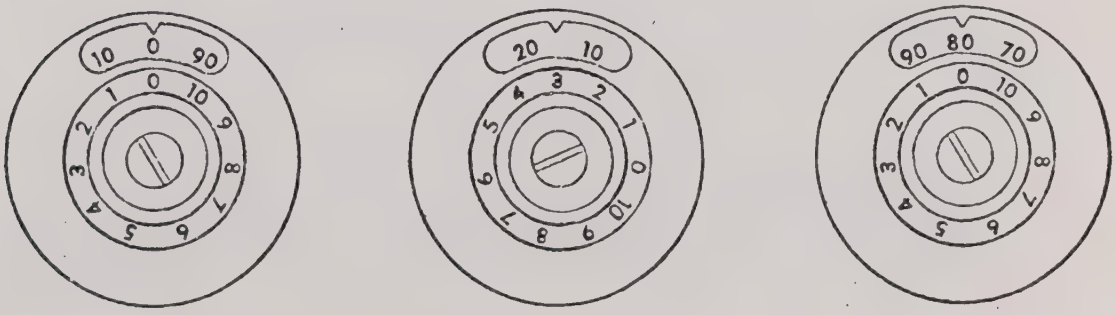
2.5.1 Description

2.5.1.1 Refer to example A - Set both dials at zero.

2.5.1.2 One complete rotation of the knob equals 100°. Clockwise is plus (+) degrees (F. or C) and counter-clockwise is minus (-) degrees. Each rotation of the knob is indicated by the small dial nearest the knob.

2.5.1.3 The large dial indicates each degree, every tenth numbered. Thus, as in example B, the large dial is set at 15, and the small dial is beyond 3, therefore the setting is +315°.

2.5.1.4 When setting to a minus (-) temperature it is necessary to subtract the degrees from 100, i.e., 20 from 100 equals "80" reading on the large dial to have a setting of -20°. This is shown in example C. It will be noted that the zero on the small dial is just to the left of the marker. Also, on the models having a range greater than -100°, it is necessary to keep track of the counter-clockwise rotation of the knob.



A (0°) B (+315°) C (-20°)

FIGURE 2 - TEMPERATURE SET DIAL

2.6 Adjusting the Failsafe - (Failsafe is located in chamber top)

2.6.1 To adjust the FAILSAFE high temperature protection unit, it is first necessary to remove the cover plate. Adjustment is made by rotating the slotted FAILSAFE control. The trip temperature is increased by rotating the control counterclockwise and is lowered by turning the control clockwise. The FAILSAFE setting is preset at the factory at +315°C (maximum rating of standard chamber). If it is desirable to change the setting to a lower temperature setting, operate the chamber at the maximum temperature desired. Adjust the FAILSAFE until it is on the verge of tripping.

CAUTION

Do not rotate the FAILSAFE setting more than one full turn lower than the trip point, as this can damage the unit.

2.7 Programming

2.7.1 Connect the correct resistances between pins 1 and 3 of the PROGRAM Jack. Set the MODE Switch to PROGRAM and the HEAT and COOL switches to their ON positions. The controller will apply heat or coolant as needed to obtain the programmed temperature.

2.7.2 A Safety plug is provided with the chamber and should be kept connected to the PROGRAM input whenever an actual programmer or actual resistance is not connected. The safety plug will prevent the chamber from accidently being programmed to a very high temperature if the MODE Switch is placed in the PROGRAM position with an open PROGRAM input.

2.7.3 The safety plug disables the heat and cool circuits of the controller when the MODE Switch is placed in the PROGRAM position.

3 CHAMBER & CONTROLLER DESCRIPTION

3.1 Chamber

3.1.1 The chamber is a precision environmental test unit having a stainless steel interior, aluminum outer case and fiberglas insulation. The air circulation is closed and provided by 140 CFM blowers (see Figure 3).

3.1.2 The chamber is heated by applying full wave power to bobbin wound nichrome heating elements via the heat switch.

3.1.3 The chamber is cooled by injecting liquid CO_2 (liquid nitorgen in the LN_2 models) into the air stream through an expansion nozzle. The coolant flow is metered by a solenoid valve, controlled by the COOL solid state switch.

3.1.4 The temperature control system is shown in block diagram form as Figure 4.

3.2 Solid State Controller

3.2.1 The controller compares the resistance of the temperature probe to the resistance of the indicated set point on the TEMPERATURE SET dial potentiometer or the digital resistance selection of the optional Digitemp controller. The resistance of a remote programming resistor is compared to the probe resistance of the MODE switch in the PROGRAM position.

3.2.2 The resistance of the probe will be either less than, equal to, or greater than the resistance of the TEMPERATURE SET potentiometer (or the DIGITEMP), i.e., program resistance. These three situations directly correspond to the chamber temperature being lower than, equal to, or higher than desired. The controller applies heat, coolant, or withholds both to obtain and maintain the selected temperature in the chamber.

3.2.3 Mode - The controller is a three mode unit, i.e.:

(a) Heat only
(b) No heat or coolant
(c) Coolant only

This mode of control ensures that LCO_2 or LN_2 is not wasted in a continuous cycling of the heaters and coolant valve such as would be the case for a simple two mode output controller.

3.2.4 Further information on the controller may be found in the complete Type III Controller Manual included as part of this information package.

3.3 Null Detector Circuit

3.3.1 A contact closure is provided at the rear which functions when the chamber reaches the indicated set point of the controller. This contact closure may be used to signal external equipment that the chamber has reached selected temperature.

3.3.2 The Delta Design Model 9308 HI-LO Step Programmer, Model 9311 TEN STEP Programmer, and the Model 9313 HI-LO AMBIENT Programmer utilize the null contacts to start their timers when they are used with the chamber. This contact closure feature is most useful in automatic test programming applications.

4 WARRANTY

Delta Design, Inc. guarantees all products manufactured and sold by it to conform to published specifications and against defective material and workmanship for a period of 90 days from the date of our shipment. Temperature chambers and electronics are warranted for one year from date of shipment. All contactor assemblies are warranted for a period of 90 days or 1/2 million cycles. Obligation under these warranties is limited to repair or replacement by Delta at its plant or one of its authorized service stations, on any of our products which Delta determines to be defective or not in accord with stated specifications. Delta will not accept responsibility for any defect caused by improper use, nor will Delta assume liability for any unauthorized repairs or modifications to its products or materials, even though defective or not in accord with the specifications. In no case will responsibility extend to products, materials, or equipment not manufactured by Delta. All products to be returned to Delta's plant for warranty repair must have prior written approval from Delta Design, Inc., and all return transportation charges will be at the buyer's expense. Delta will not accept liability for any unauthorized returns. No liability will be accepted for any damages to customer's materials, and equipment due to the use or misuse of Delta's products, nor for any loss of profits or other special damages. Delta Design, Inc., reserves the right to change price, design features and/or specifications without notice.

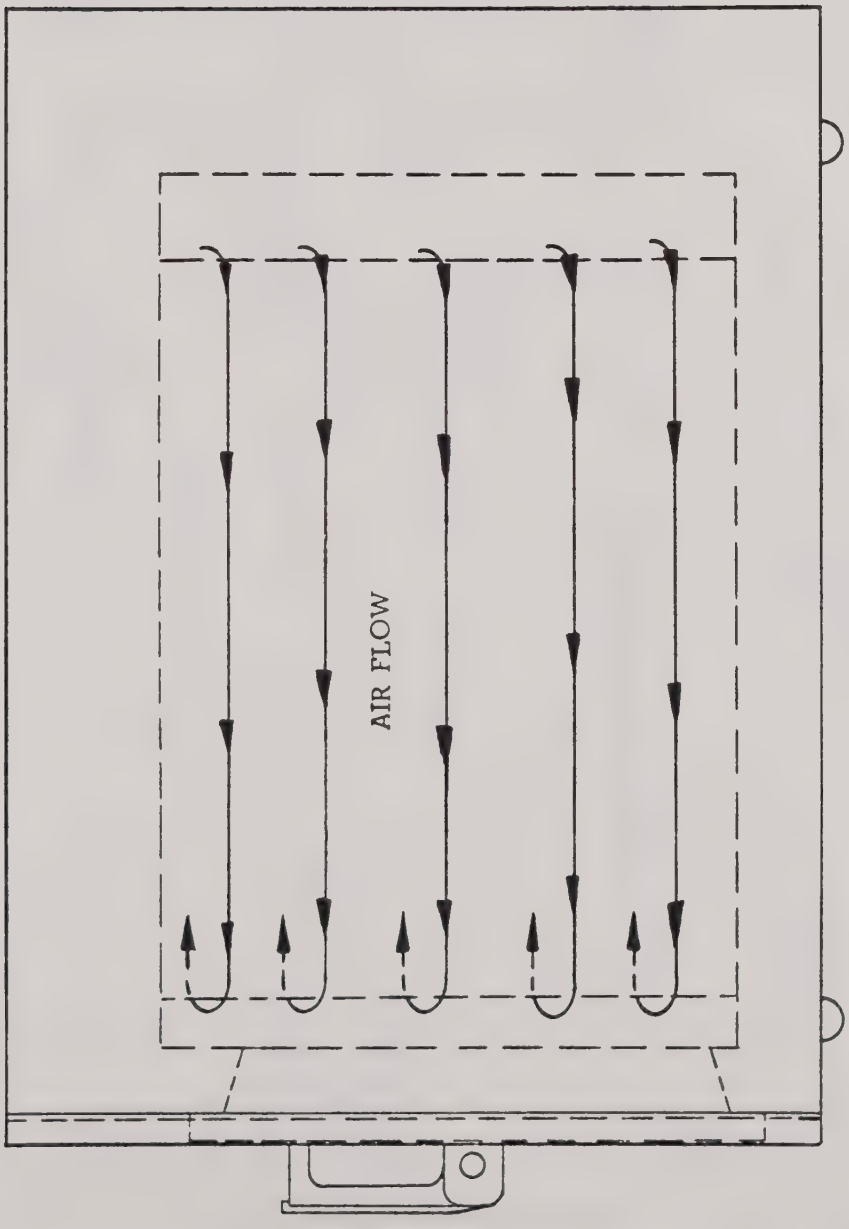
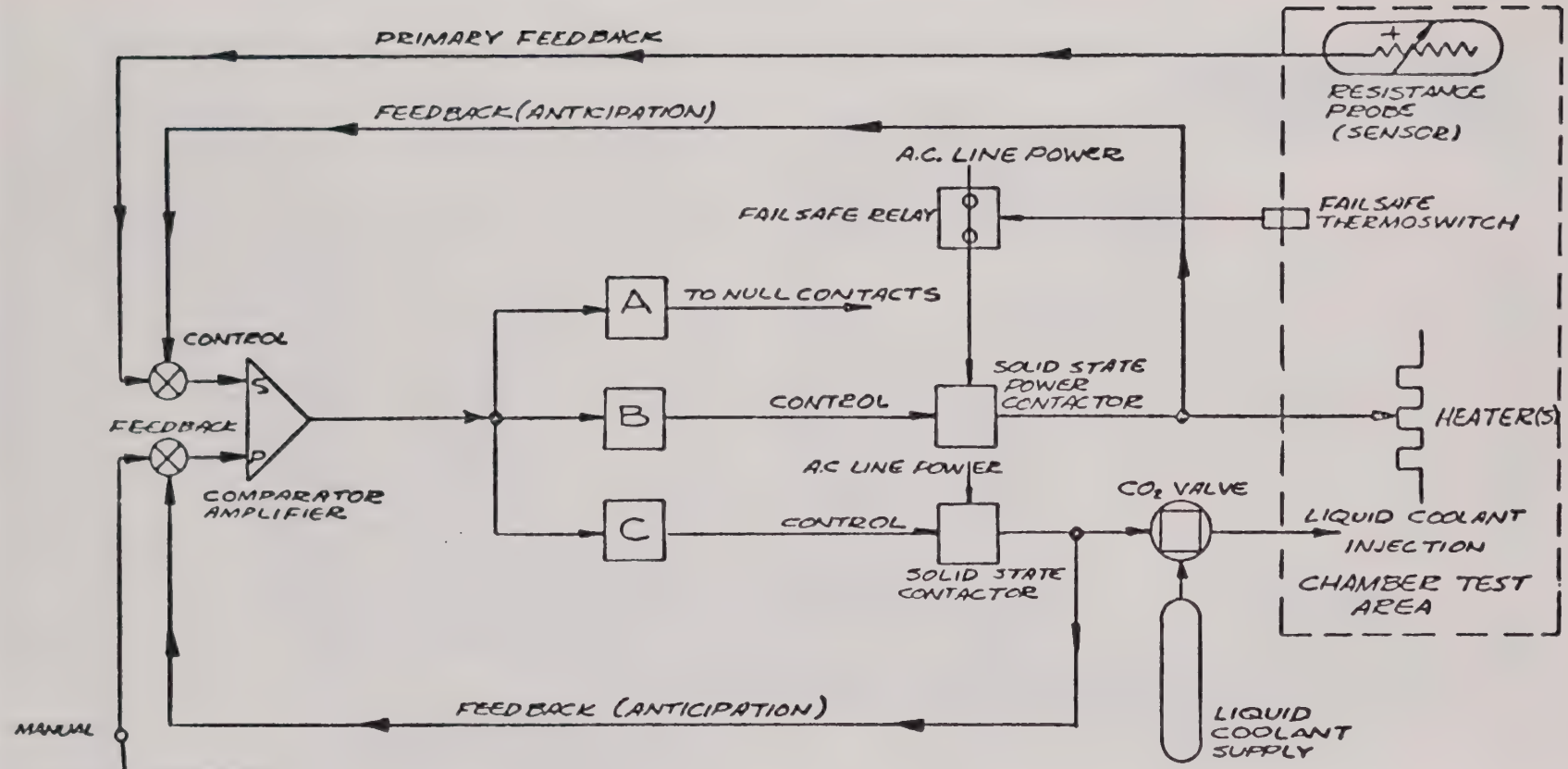


FIGURE 3

CHAMBER AIR FLOW PATTERN



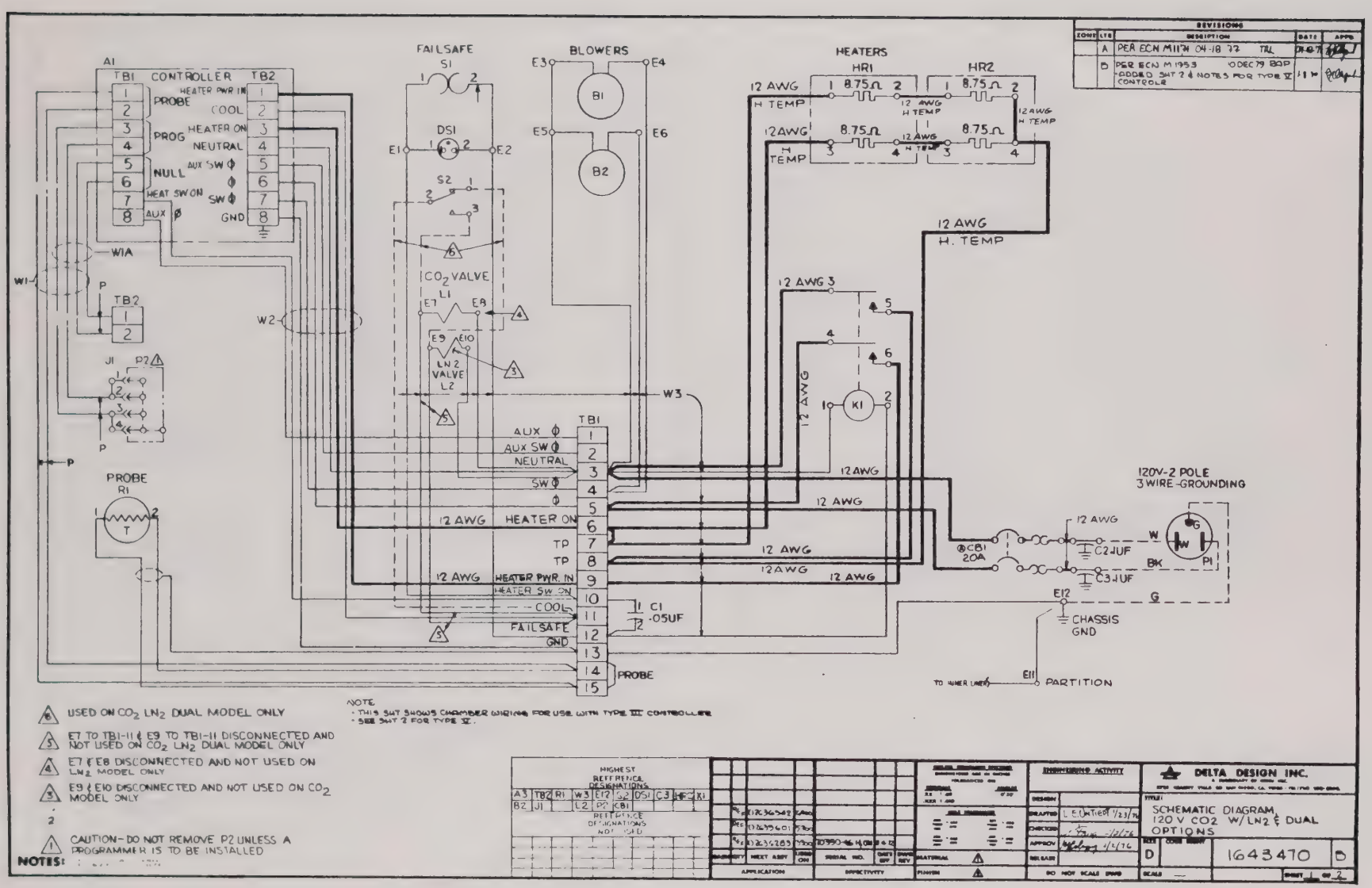
TEMPERATURE CONTROL SYSTEM
SOLID STATE, TYPE III
DELTA DESIGN INC.

A = NULL DETECTOR SCHMITT
(REED RELAY OUTPUT)
PRODUCES CONTACT CLOSURE
FOR /P/ = /S/

B = HEAT. SCHMITT
(REED RELAY OUTPUT)
PRODUCES CONTACT CLOSURE
FOR /P/ INPUT AT AMPLIFIER
GREATER THAN /S/

C = COOL. SCHMITT
(REED RELAY OUTPUT)
PRODUCES CONTACT CLOSURE
FOR /S/ GREATER THAN /P/

FIGURE 4



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	A	PER ECN M1174 04-18-77 TRL	04-07-77	
	D	PER ECN M 1953 10 DEC 79 BDP ADDED SHT 2 & NOTES FOR TYPE IV CONTROLS	1-11-80	

⚠6 USED ON CO_2 LN_2 DUAL MODEL ONLY

⚠5 E7 TO TB1-11 & E9 TO TB1-11 DISCONNECTED AND NOT USED ON CO_2 LN_2 DUAL MODEL ONLY

⚠4 E7 & E8 DISCONNECTED AND NOT USED ON LN_2 MODEL ONLY

⚠3 E9 & E10 DISCONNECTED AND NOT USED ON CO_2 MODEL ONLY

⚠2

⚠1 CAUTION-DO NOT REMOVE P2 UNLESS A PROGRAMMER IS TO BE INSTALLED

NOTES:

NOTE
- THIS SHT SHOWS CHAMBER WIRING FOR USE WITH TYPE III CONTROLLER
- SEE SHT 2 FOR TYPE IV.

HIGHEST REFERENCE DESIGNATIONS
A3 TB2 R1 W3 E12 S2 DS1 C3 K1
B2 J1 L2 P2 KB1
REFERENCE DESIGNATIONS NOT USED

DELTA DESIGN INC.

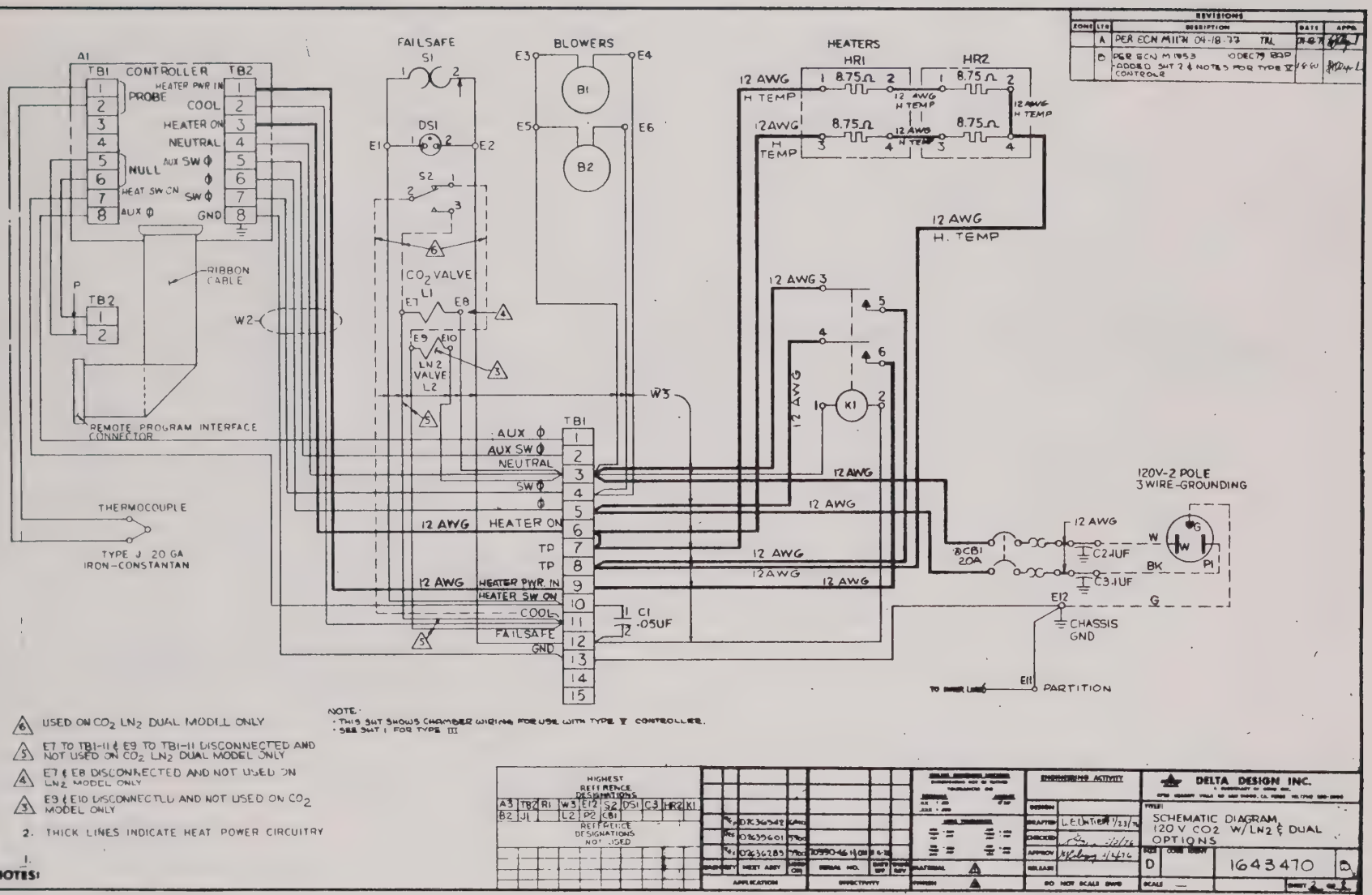
TITLE: SCHEMATIC DIAGRAM, 120 V CO2 W/LN2 & DUAL OPTIONS

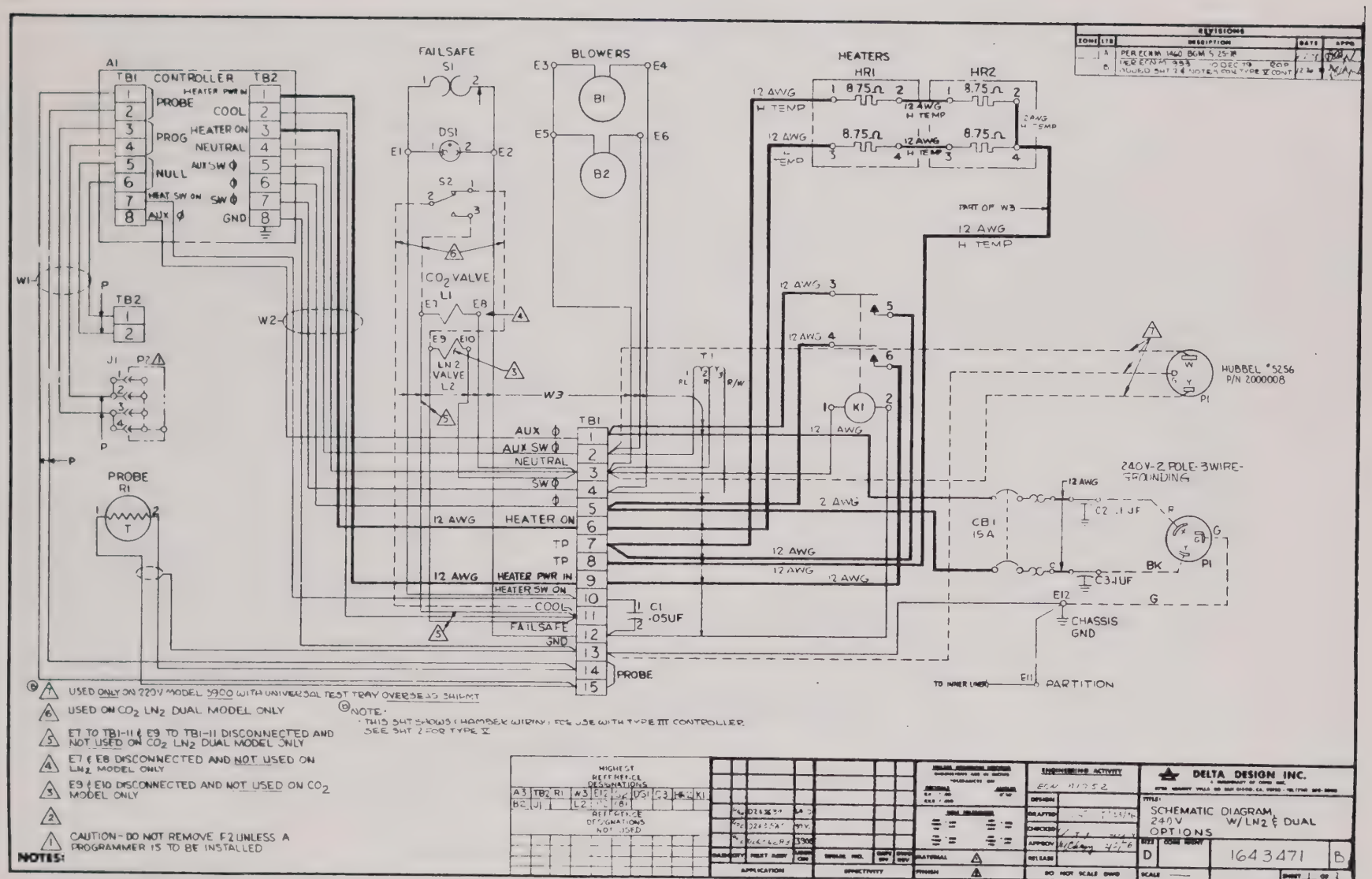
DRAWN L.ELLIOTT 1/23/76
CHECKED 1/26/76
APPROV 4/4/76

SIZE D | CODE IDENT | 1643470 | D

SCALE — | SHEET 1 OF 2

BILL CARD


REVISIONS
ZONE LTR DESCRIPTION DATE APPD
A PER ECN M1178 04-18-73 TRL
B PER ECN M1953 ODEC79 RDP
ADDED SHT 2 & NOTES FOR TYPE II CONTROLLER
A1
TB1 CONTROLLER TB2
HEATER PWR IN
PROBE
COOL
HEATER ON
NEUTRAL
AUX SW Φ
NULL
Φ
HEAT SW ON
SW Φ
AUX Φ
GND
RIBBON CABLE
REMOTE PROGRAM INTERFACE CONNECTOR
THERMOCOUPLE
TYPE J 20 GA IRON-CONSTANTAN
FAILSAFE
S1
DS1
S2
CO2 VALVE L1
LN2 VALVE L2
BLOWERS
B1
B2
HEATERS
HR1
HR2
8.75Ω
12 AWG H TEMP
12 AWG
H. TEMP
12 AWG 3
K1
W2
W3
TB1
AUX Φ
AUX SW Φ
NEUTRAL
SW Φ
Φ
HEATER ON
TP
TP
HEATER PWR IN
HEATER SW ON
COOL
FAILSAFE
GND
C1 .05UF
120V-2 POLE 3 WIRE-GROUNDING
CB1 20A
C2 1UF
C3 1UF
W
BK
G
CHASSIS GND
PARTITION
NOTE:
• THIS SHT SHOWS CHAMBER WIRING FOR USE WITH TYPE V CONTROLLER.
• SEE SHT 1 FOR TYPE III
6 USED ON CO2 LN2 DUAL MODEL ONLY
5 E7 TO TB1-11 & E9 TO TB1-11 DISCONNECTED AND NOT USED ON CO2 LN2 DUAL MODEL ONLY
4 E7 & E8 DISCONNECTED AND NOT USED ON LN2 MODEL ONLY
3 E9 & E10 DISCONNECTED AND NOT USED ON CO2 MODEL ONLY
2. THICK LINES INDICATE HEAT POWER CIRCUITRY
1. NOTES:
HIGHEST REFERENCE DESIGNATIONS
A3 TB2 R1 W3 E12 S2 DS1 C3 HR2 K1
B2 J1 L2 P2 CB1
REFERENCE DESIGNATIONS NOT USED
DELTA DESIGN INC.
SCHEMATIC DIAGRAM 120 V CO2 W/LN2 & DUAL OPTIONS
1643470
D
SHEET 2 OF 2



NOTES:

1. CAUTION - DO NOT REMOVE F2 UNLESS A PROGRAMMER IS TO BE INSTALLED
2.
3. E9 & E10 DISCONNECTED AND NOT USED ON CO_2 MODEL ONLY
4. E7 & E8 DISCONNECTED AND NOT USED ON LN_2 MODEL ONLY
5. E7 TO TB1-11 & E9 TO TB1-11 DISCONNECTED AND NOT USED ON CO_2 LN_2 DUAL MODEL ONLY
6. USED ON CO_2 LN_2 DUAL MODEL ONLY
7. USED ONLY ON 220V MODEL 3900 WITH UNIVERSAL TEST TRAY OVERSEAS SHIPMT

NOTE:
- THIS SHT SHOWS CHAMBER WIRING FOR USE WITH TYPE III CONTROLLER. SEE SHT 2 FOR TYPE II

ZONE	LTR	REVISIONS DESCRIPTION	DATE	APPD
	A	PER ECN# 1460 BOM S 25-3R		
	B	PER ECN# 993 10 DEC 79 ROD ISSUED SHT 2 & NOTES ON TYPE II CONT	12 Dec	

DELTA DESIGN INC.

TITLE: SCHEMATIC DIAGRAM 240V W/LN2 & DUAL OPTIONS

SIZE D | 1643471 | B

SCALE — | SHEET 1 OF 2

ENGINEERING ACTIVITY ECN #1752

DRAWN | CHECKED | APPROV | RELEASE

DO NOT SCALE DWG

HIGHEST REFERENCE DESIGNATIONS NOT USED

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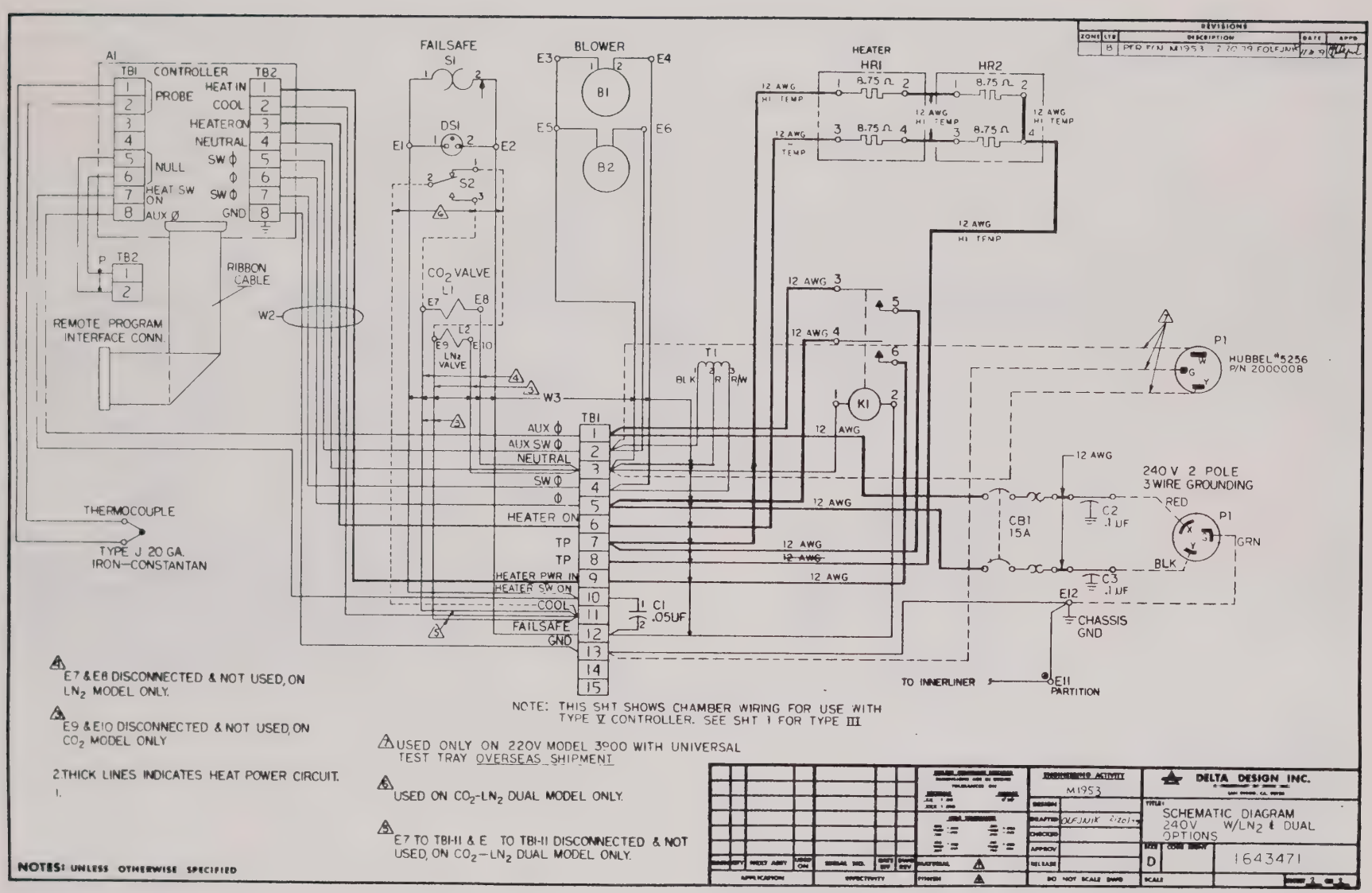
B2 J1 L2 F2 B1

REFERENCE DESIGNATIONS NOT USED

APPLICATION | EFFECTIVITY



NOTE: THIS SHT SHOWS CHAMBER WIRING FOR USE WITH TYPE V CONTROLLER. SEE SHT 1 FOR TYPE III

⚠4 E7 & E8 DISCONNECTED & NOT USED, ON LN_2 MODEL ONLY.

⚠3 E9 & E10 DISCONNECTED & NOT USED, ON CO_2 MODEL ONLY

2. THICK LINES INDICATES HEAT POWER CIRCUIT.

1.

⚠1 USED ONLY ON 220V MODEL 3900 WITH UNIVERSAL TEST TRAY OVERSEAS SHIPMENT

⚠5 USED ON CO_2-LN_2 DUAL MODEL ONLY.

⚠6 E7 TO TB1-11 & E TO TB1-11 DISCONNECTED & NOT USED, ON CO_2—LN_2 DUAL MODEL ONLY.

NOTES: UNLESS OTHERWISE SPECIFIED

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPD
	B	PER P/N M1953 2 10 79 FOLEJNIK	2/8/79	

ENGINEERING ACTIVITY M1953

DESIGN
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DO NOT SCALE DWG

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TITLE: SCHEMATIC DIAGRAM 240V W/LN_2 & DUAL OPTIONS

SIZE D | CODE IDENT | 1643471

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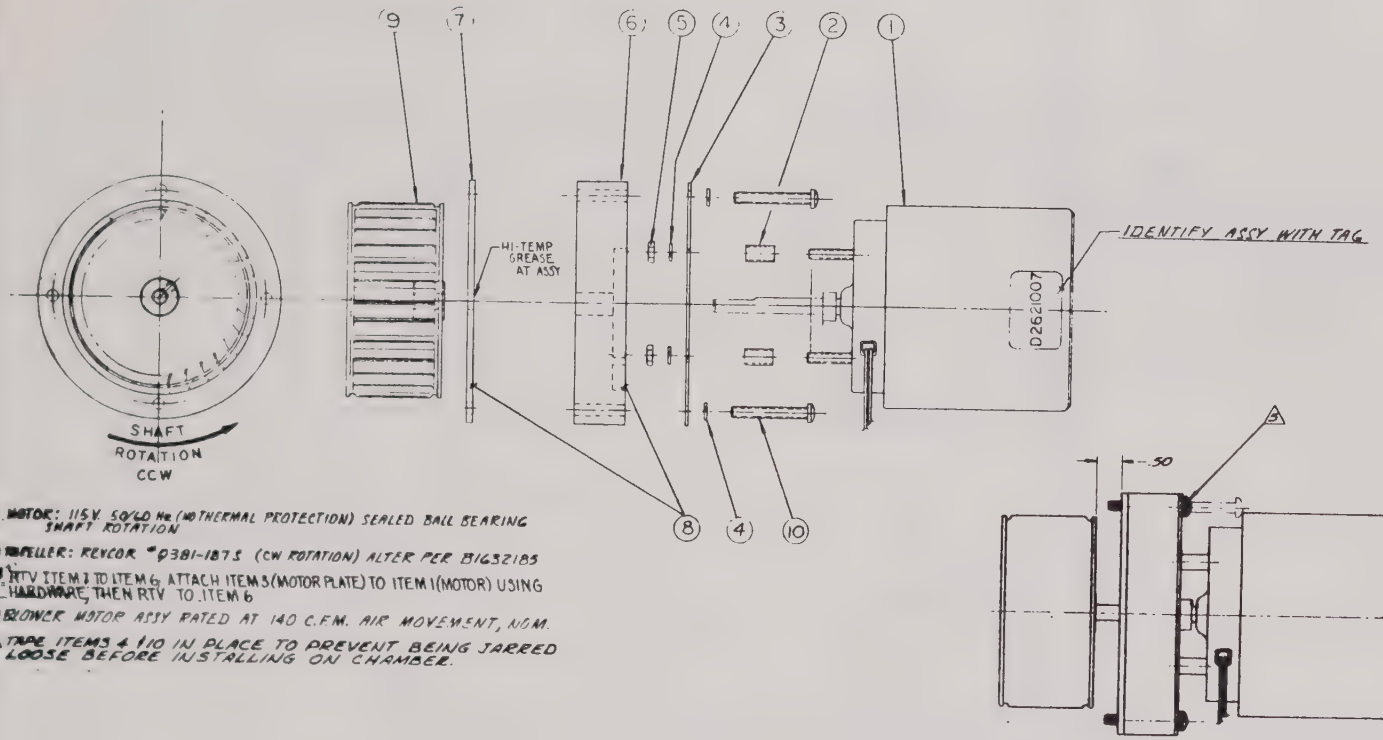


1. MOTOR: 115 V. 50/60 Hz (NO THERMAL PROTECTION) SEALED BALL BEARING SHAFT ROTATION
2. IMPELLER: REVCOR "P381-187S (CW ROTATION) ALTER PER B1G32185
3. RTV ITEM 2 TO ITEM 6, ATTACH ITEM 5 (MOTOR PLATE) TO ITEM 1 (MOTOR) USING HARDWARE, THEN RTV TO ITEM 6
4. BLOWER MOTOR ASSY RATED AT 140 C.F.M. AIR MOVEMENT, N.O.M.
3. TAPE ITEMS 4 & 10 IN PLACE TO PREVENT BEING JARRED LOOSE BEFORE INSTALLING ON CHAMBER.

NOTES:

REV	LTR	DESCRIPTION	BY	DATE
	A	PER ECN 1801 REVISED NOTE 3	BGM	4-17-78

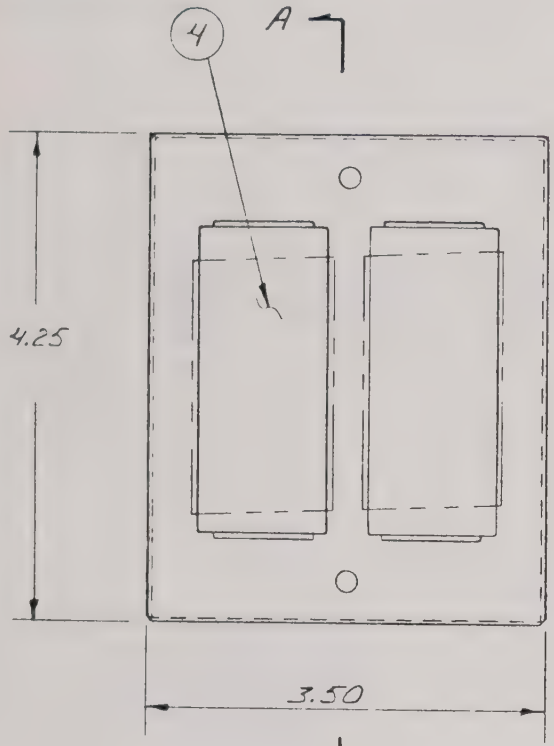
DRAWN	C. ELLIS
CHECKED	C. ELLIS
APPROVED	
MATERIAL	
MULTI-ASSY APPLICATION	STD
SERIAL NOS EFFECTIVITY	ASSY NEXT ASSY

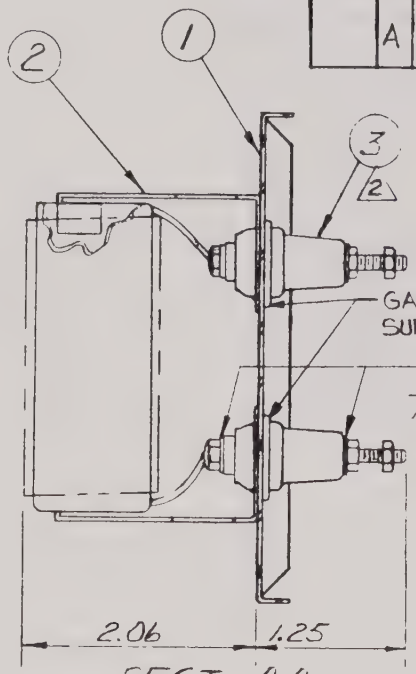
50/60 Hz BLOWER MTR ASSEMBLY CCW SHAFT ROTATION

STD PART 2621007

D 2621007 A

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PER ECN M1897 J.RAMER 10-15-72 REMOVED ITEM #5. (WAS ASBESTOS INSTEAD OF CORK GASKET)	10-16-72	





SECT. A-A

DASH	HTR RES
-001	8.75 Ω
-002	15.0 Ω
-003	17.5 Ω
-004	20.0 Ω

P/L "B" SIZE

QTY REQ'D	NOMENCLATURE OR DESCRIPTION	CODE IDENT.	IDENTIFYING NUMBER	SPECIFICATION	MATERIAL OR NOTE	ITEM NO

1. ALL DIM. ARE REF ONLY.

NOTES:

UNLESS OTHERWISE SPECIFIED THE FOLLOWING APPLIES
BREAK ALL SHARP EDGES .005
MAX. SURFACE ROUGHNESS 125 RMS
THDS: INT CL 2B EXT CL 2A

— MULTIPLE STD USAGE —

NEXT ASSY	USED ON	SERIAL NOS	DATE EFF	DWG REV LTR
APPLICATION		EFFECTIVITY		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± 64 ANGLES ± ½°
DECIMALS .XX ± .010
.XXX ± .005

MATERIAL

FINISH

	BY	DATE
DESIGN		
DRAFTED	K. NAPP	5-1-72
CHECKED	Hanna	7-6-72
APPROV.	K. Napp	7-6-72

DO NOT SCALE DRAWING

PART NO NOTED

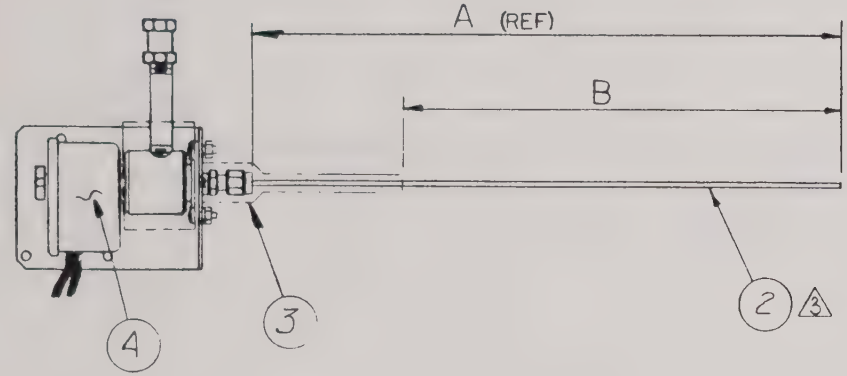
DELTA DESIGN INC.
8000 FLETCHER PKWY
LA MESA CALIF 92041
TEL A/C (714) 465-4141

TITLE: HEATER ASSY

SIZE	CODE IDENT. NO	DRAWING NO	REV LTR
B		26222524	

SCALE FULL SHEET 1 OF 1

8T



REVISIONS				
ZONE	LTR	DESRIPTION	DATE	APPD
	A	PER ECN M694 DTD 6-4-74 F.O. 4.75 DIM WAS 3.75		[illegible] 6-6-74
	B	PER ECN M747 REV. A. 6-24-74 -001 "B" DIM WAS 4.75	7-8-74	[illegible]
	C	PER ECN M1012 OLEJNIK 6-11-75 -002 "A" DIM WAS 10.44 "B" DIM WAS 3.00	6/12/75	[illegible]
	D	PER ECN M1017 OLEJNIK 7-16-75	[illegible]	[illegible]
	E	PER ECN 1365 BGM 3-28-78 VALVE ASSY ITEM 4 UPDATED, SEE ECN — TABULATION BLOCK 4 SC WAS 3.00	4-13-78	[illegible]
	F	PER ECN M1521 BGM 7-20-78 INJECTOR ASSY ITEM 2 UPDATED A+B DIMS CHANGED IN TABULATION PER ECN, SEE ECN	7-31-78	[illegible]

DASH NO	A	B	USED ON
-001	8.62	3.75	2300
-002	10.12	5.50	2850
-003	7.00	6.00	7650
-004	9.18	6.00	5900
-005	20.62	20.00	2850
-006			
-007			
-008			
-009			
-010			

3 INSERT ITEM 2, TUBE, ALL THE WAY TO VALVES INNER ORIFICE BEFORE TIGHTENING DOWN TUBE FITTINGS

4 FINISH (IF APPLICABLE)

5 MATL (IF APPLICABLE)

NOTES: UNLESS OTHERWISE SPECIFIED

DASH	QTY	NEXT ASSY	USED ON
		MULTIPLE	STD USAGE

APPLICATION

SERIAL NO. | DATE EFF | DWG REV

EFFECTIVITY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS .XX ± .03 .XXX ± .010
ANGLES 0° 30'
HOLE TOLERANCES
.613 THRU .750 +.004 -.001
.133 THRU .339 +.004 -.001
.130 THRU .339 +.001 -.001
.391 THRU .709 +.004 -.001

MATERIAL 1
FINISH 4

ENGINEERING ACTIVITY

DESIGN	
DRAFTED	KNAPP 3-29-73
CHECKED	[illegible]
APPROV	[illegible] 4-4-73
RELEASE	

DO NOT SCALE DWG

DELTA DESIGN INC.
A SUBSIDIARY OF CONU INC
9738 KEARNY VILLA RD SAN DIEGO, CA 92123 - TEL (714) 292-5000

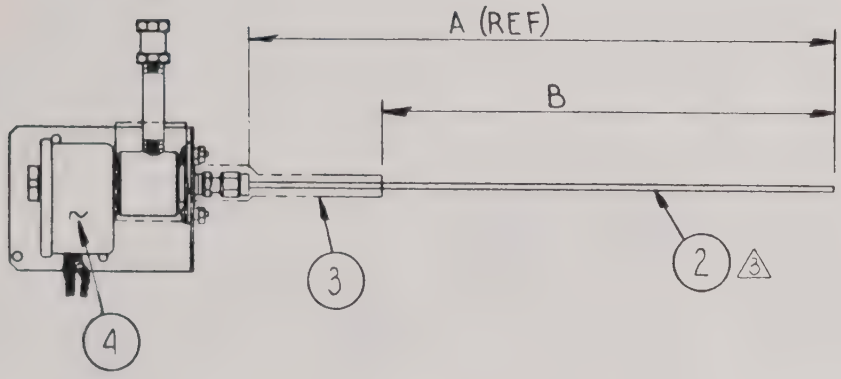
TITLE: CO_2 ASSY (900 PSI) SINGLE STEM

SIZE B | CODE IDENT | 2618016

SCALE 1/2 X | SHEET 1 OF 1

INITIAL RELEASE ECN M

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPD
	B	PER ECN M1365 4-14-78 F.J.O.	4-14-78	
	C	PER ECN M1521 BGM 7-21-78 INJECTOR ASSY. ITEM 2, UPDATED, A+B DIMS CHANGED IN TABULATION BLOCK, SEE ECN	7-31-78	



DASH NO	A	B	USED ON
-001	8.62	3.75	2300
-002	10.12	5.50	2850
-003	7.00	6.00	7650
-004	9.18	6.00	5900
-005	26.62	20.00	2850
-006			
-007			
-008			
-009			
-010			

3. INSERT ITEM 2, TUBE, ALL THE WAY TO VALVES INNER ORIFICE BEFORE TIGHTENING TUBE FITTINGS

3 FINISH (IF APPLICABLE)

3 MATL (IF APPLICABLE)

NOTES: UNLESS OTHERWISE SPECIFIED

MULTI-STD USAGE

DASH	QTY	NEXT ASSY	USED ON	SERIAL NO.	DATE EFF	DWG REV
APPLICATION				EFFECTIVITY		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS .XX ± .03 .XXX ± .010
ANGLES 0° 30'
HOLE TOLERANCES

MATERIAL 1
FINISH 2

ENGINEERING ACTIVITY: ECN 1365

DESIGN	
DRAFTED	BGM 3-26-78
CHECKED	
APPROV	
RELEASE	

DO NO SCALE DWG

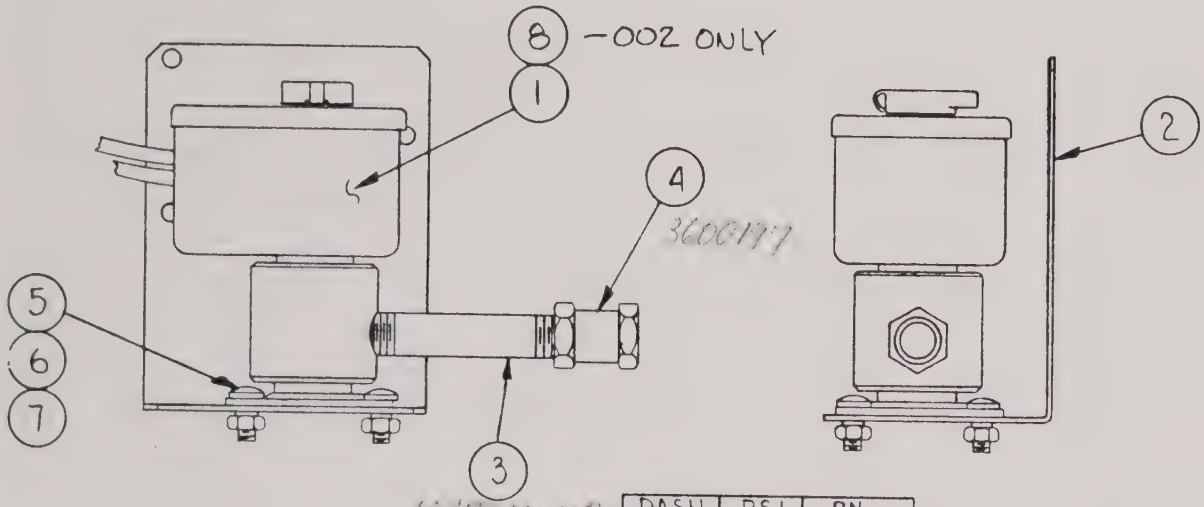
DELTA DESIGN INC.
A SUBSIDIARY OF COMU INC
SAN DIEGO, CA. 92123

TITLE: CO_2 ASSY (300 PSI) SINGLE STEM

SIZE	CODE IDENT	
B		2618015

SCALE 1/2 SHEET __ OF __

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPD



1647542-105

DASH	PSI	PN
-001	900	1800117
-002	300	1800105

⚠ FINISH (IF APPLICABLE)

⚠ MATL (IF APPLICABLE)

NOTES: UNLESS OTHERWISE SPECIFIED

DASH	QTY	NEXT ASSY	USED ON
		MULTI-USAGE	
APPLICATION			

SERIAL NO.	DATE EFF	DWG REV
EFFECTIVITY		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS: .XX ± .03, .XXX ± .010
ANGLES: 0° 30'
HOLE TOLERANCES

MATERIAL ⚠

FINISH ⚠

ENGINEERING ACTIVITY	
DESIGN	
DRAFTED	BGM 3-24-78
CHECKED	
APPROV	
RELEASE	
DO NO SCALE DWG	

DELTA DESIGN INC.
A SUBSIDIARY OF CONTROL DATA CORP
SAN DIEGO CA. 92123

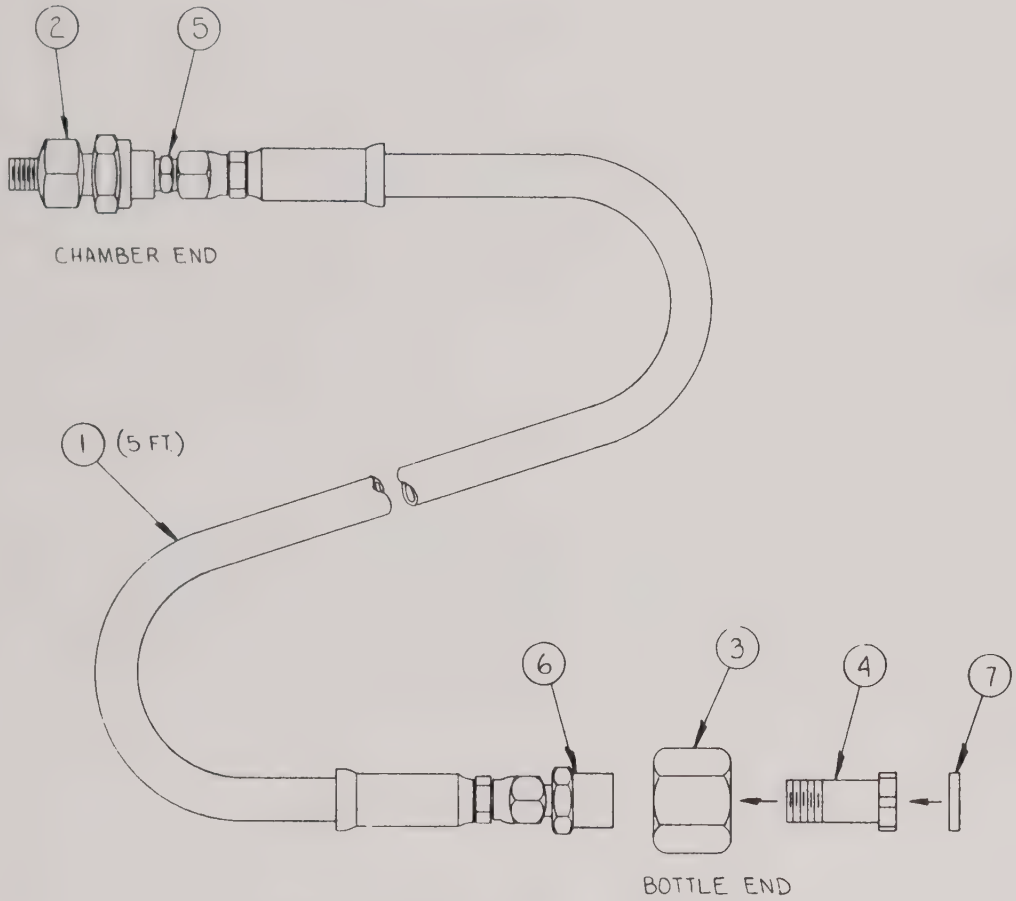
TITLE: CO_2 VALVE & BRACKET ASSY

SIZE	CODE IDENT	
B		1647407

SCALE 1/1 SHEET 1 OF 1

2.11

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPD



DASH	QTY	NEXT ASSY	USED ON
001	1	1640111	8000
001	1		7650
001	1	2636A2	6401
001	1	2635601	5300
001	1	2636283	3900
001	1	2635402	2850
001	1	2615-01	2311

APPLICATION

SERIAL NO. | DATE EFF | DWG REV

EFFECTIVITY

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS: .XX ± .03; .XXX ± .010
ANGLES: 0° 30'

HOLE TOLERANCES

.013 THRU .125	+.004 −.001	.251 THRU .500	+.006 −.001
.126 THRU .250	+.005 −.001	.501 THRU .750	+.008 −.001

MATERIAL ⚠1
FINISH ⚠2

ENGINEERING ACTIVITY	
ECN M1622	
DESIGN	B NIELSEN 10-2-72
DRAFTED	
CHECKED	
APPROV	
RELEASE	

DO NOT SCALE DWG

DELTA DESIGN INC.
A SUBSIDIARY OF CONU INC.
SAN DIEGO, CA. 92123

TITLE: HOSE SHIP KIT

SIZE C | CODE IDENT | 2618020

SCALE 1/1 | SHEET 1 OF 1

⚠ FINISH (IF APPLICABLE)

⚠ MATL (IF APPLICABLE)

NOTES: UNLESS OTHERWISE SPECIFIED

INDEX OF ASSEMBLIES - 5900 CHAMBER

	TITLE	SIZE & NO.	SHEET
1.	Innerliner Ass'y	E2635590	1
2.	Plenum Ass'y	D2635586	1
3.	Top Sheet Ass'y	D2635588-001	1
4.	Bottom Sheet Ass'y	D2635588-002	2
5.	Baffle Ass'y	C2635589	2
6.	Scroll	D2635606	2
7.	Injector Guide Tube Ass'y	C2635591	2
8.	Bottom Panel Ass'y	D2635595	3
9.	Bezel Ass'y	D2600086	3
10.	Back Panel Ass'y	D2635593	3
11.	Right Side Panel Ass'y	D2635596	4
12.	Weld Ass'y - Tube Guide	B1640309-001	4
13.	Heater Ass'y	B2622524-001	4
14.	Element Ass'y	B2635875-001	4
15.	Cable Ass'y (W1)	A2635264-003	5
16.	Cable Ass'y (W2)	A2635265-003	5
17.	Cable Ass'y (W3)	A2635607-001	5
18.	CO_2 Ass'y	B2618016-004	6
19.	CO_2 Injector Ass'y	B1647840-006	6
20.	CO_2 Valve & Bracket Ass'y	B1647407-001	6
21.	Can Ass'y	B1632196-003	6
22.	Blower Motor Ass'y	D2621007	7
23.	Thermoswitch Ass'y	B2602503	7
24.	Partition Ass'y	D2635599	7
25.	CO_2 Ass'y - Dual Stem	B2618017-004	8

	TITLE	SIZE & NO.	SHEET
26.	CO_2 Injector Ass'y	B2618003-008	8
27.	CO_2 Valve & Bracket Ass'y	B1647407-002	8
28.	Hose Ship Kit	C2618020-001	9
29.	Capacitor, Mod.	A2635048	11
30.	CO_2 Assy, Single Stem (300 PSI)	B2618015-004	12
31.	Injector Ass'y, CO_2 Single Stem	B1647840-005	12
32.	CO_2 Valve & Bracket Ass'y	B1647407-002	12
33.	Articulated Hinge	D1648298	1
34.	Plug Mod.	B2600409	12
35.	Interconnect Assy Type V Controller with IEEE-488	D1650223	Multi-Usage
36.	Chamber - Type V Controller (Retrofit)	D1650241	13

CORKS 9900034

Right handle 1650402-001

Left handle 1650402-002

Cork for the side 9900036

Feed-Thru 1500262

(for Gas Out)

PL 2635601 REV ____ SHT 1 OF 13
DESCRIPTION TOP ASS'Y 5900 CHAMBER
NEXT ASSY END ITEM BY ____ CK'D ____ APPD ____

REV	ECN	DATE	BY	APP
N	[illegible]	[illegible]	[illegible]	[illegible]
P	[illegible]	[illegible]	[illegible]	[illegible]
R	[illegible]	[illegible]	[illegible]	[illegible]
S	[illegible]	[illegible]	[illegible]	[illegible]

DELTA DESIGN
5725 KEARNY VILLA RD
SAN DIEGO, CALIF

JOB NO ____ S.O NO ____
QTY ____ PROM DATE ____ ACT ____
RUN * ____ MACH ____

ITEM NO	ASSY B QTY -001	-002	-003	-004	INDENTURE	SIZE	DRAWING NO.	REV	DESCRIPTION	MFG OR MFG NO	STOCK OR PART NO	JOB QTY	ALL	QTY REC	FAB CD	PURCHASING P.O. NO	QTY DUE	REC'D	MANUFACTURE ACT	EST ACT	STD HRS	COM	COM	PLATE/PAINT IN	OUT	4RE4
00	X					D	2635601	H	CHAMBER ASS'Y. MOD. 5900		2635601															
00	REF					D	1643470	A	SCHEMATIC 120V																	
00	REF					D	1643471	A	SCHEMATIC 240V																	
00	REF																									
00	REF					D	1643453	B	CO_2 TO LN_2 CHAM. CONVERSION ASS'Y		1643453-009															
00	REF					D	2639168	C	CO_2 & LN_2 DUAL CONVERSION		2639168															
00	REF					D	1640084	A	CO_2 TO LN_2 WITH REDUNDANT VALVE		1640084-001															
00	REF					D	1640084	A	CO_2/LN_2 DUAL WITH REDUNDANT VALVE		1640084-002															
00	REF					PL	1648289		TOP ASSY, TYPE III CONTROLLER																	
00	REF					D	1648298		ARTICULATED HINGE		1648298-001															
00	REF					D	1650223		INTERCONNECT ASSY - TYPE II (CONTLR w/IEEE-488		1650223-001															
00	REF					D	1650241		CHAMBER, TYPE II CONTROLLER (RETROFIT)		1650241-001															
01	1					E	2635590	B	INNERLINER ASSY		2635590															
01	1					D	2635586	A	PLENUM ASS'Y, INNERLINER		2635586															
00									RIGHT HAND		1650412-001															
00									LEFT HAND		1650412-002															
01	1					D	1635583		SHEET, LEFT SIDE & REAR		1635583															
02	1					D	1635584		SHEET PLENUM		1635584															
03	1					D	1635585	A	SHEET, REAR, PLENUM		1635585															
04	1					B	1630007	C	RETAINER, VENT TUBE		1630007															
05	1					B	1634771	C	TUBE, CO_2 VENT		1634771-003															
06	1					B	1634763	B	TUBE		1634763-004															
07	4								* 8-32 OHIO WELD NUT		1500176															
08																										
09																										
10																										
02	1					D	1695587		SHEET R. SIDE, INNERLINER		1635587															
03	1					D	2635588	B	SHEET TOP ASS'Y, INNERLINER		2635588-001															
00																										
01	1					D	2635588	B	SHEET, TOP, INNERLINER		2635588-003															
02	1					D	2635588	B	BRACKET, BAFFLE MOUNTING	.03 THK SST	2635588-005															
									302 304 COND A FIN. 2E																	
03	1					B	1634774		TUBE, PROBE GUIDE		1634774-008															

NOTES: ⚠ THESE DGWS ARE FOR OPTIONAL EQUIP. ONLY & ARE NOT PART OF BASIC CHAMBER.

P/L 2635601

PL 2635601 REV ____ SHT 2 OF 13
DESCRIPTION TOP ASS'Y 5900 CHAMBER
NEXT ASSY END ITEM BY ARCMACK'D ____ APPD ____

REV	ECN	DATE	BY	APP
I	1959	12-60	EJB	EJD

DELTA DESIGN
5725 KEARNY VILLA RD
SAN DIEGO, CALIF

JOB NO ____ S.O NO ____
QTY ____ PROM DATE ____ ACT ____
RUN * ____ MACH ____

ITEM NO	ASSY B QTY -001	-002	-003	-004	INDENTURE	SIZE	DRAWING NO.	REV	DESCRIPTION	MFG OR MFG NO	STOCK OR PART NO
04	1					D	2635588	B	SHEET BOTTOM ASS'Y., INNERLINER		2635588-002
01	1					D	2635588	B	SHEET, BOTTOM, INNERLINER	.03 SST	2635588-004
									302-304 COND A. FIN. 2B		
02	1					D	2635588	B	BRACKET, BAFFLE MOUNTING	.03 SST	2635588-005
									302-304 COND A" FIN. 2B		
03									RIGHT HANDLE		1650412-001
04									LEFT HANDLE		1650412-002
05	1					C	2635589	A	BAFFLE ASS'Y.		2635589
00											
00											
01	1					C	2635589	A	SHEET .03 SST TYPE 302-304	COND A" FIN. 2B	2635589-001
02	1					C	2635589	A	SHEET .03 SST TYPE 302-304	COND A" FIN. 2B	2635589-002
03	1					C	2635589	A	SHEET .03 SST TYPE 302-304	COND A" FIN. 2B	2635589-003
04											
05											
06	2					D	2635606		SCROLL (HOUSING BLOWER WHEEL)		2635606
00											
00											
01	1								HOUSING, BLOWER WHEEL		2100701
02	4								WELD NUT	OHIO NUT *XN1713	1500189
03											
07	2								SCROLL RING		1600015
08											
09	1					C	2635591	A	INJECTOR GUIDE TUBE ASS'Y., LN_2		2635591
00											
00											
01	1					C	2635591	A	.25 O.D. × .028 WALL SST	WELD & DRAWN TUBE	2635591-001
02	1					C	2635591	A	.25 O.D. × .028 WALL SST	TYPE 304 8504/5565	2635591-002
03											
10	1					B	1635592		INJECTOR GUIDE TUBE, CO_2		1635592
11	14								*6 × 3/8 PHP-SMS TYPE A"		6906380-400
12	1/8								RTV 106 (RED)		2400003
13											

JOB QTY	ALL	QTY REC	FAB CD	PURCHASING PO NO	QTY DUE	REC'D	MANUFACTURE ACT STD HRS	EST ACT COM	ACT COM	PLATE/PAINT IN	OUT	APEA

NOTES.

P/L 2635601

PL 2635601 REV ____ SHT 3 OF 13
DESCRIPTION TOP ASS'Y 5900 CHAMBER
NEXT ASSY END ITEM BY ARSMA CK'D ____ APPD ____

REV ECN DATE BY APP

DELTA DESIGN
5725 KEARNY VILLA RD
SAN DIEGO, CALIF

JOB NO ____ S O NO ____
QTY ____ PROM DATE ____ ACT ____
RUN * ____ MACH ____

ITEM NO	ASSY & QTY -001	-002	-003	-004	INDENTURE	SIZE	DRAWING NO.	REV	DESCRIPTION	MFG OR MFG NO	STOCK OR PART NO	JOB QTY	ALL	QTY REC	FAB CD	PURCHASING PO NO	QTY DUE	REC	MANUFACTURE ACT STD HRS	EST ACT COM	COM	PLATE/PAINT IN	OUT	AREA
14																								
15																								
16																								
17																								
18																								
02	1					D	1635598	A	FRONT PANEL		1635598													
03	1					D	2635595	A	PANEL ASS'Y, BOTTOM		2635595													
00																								
00																								
01	1					D	2635595	A	PANEL .06 THK AL. ALY.		2635595-001													
									3003-H14 FINE BARK TEXT.															
02	4								¼-20 FLAT HEAD RIVNUT	BF. GOODRICH 25-80	1700014													
03	5								*6-32 CSK. HEAD RIVNUT	BF. GOODRICH A6-106	1700037													
04																								
05																								
04	1					D	2600086	D	BEZEL ASS'Y.		2600086													
00																								
01	1					D	2600086	D	ANGLE, AL. ALY. EXTRD.	6063-T5	2600086-001													
									QQ-A-274 .75×.75×.12×17.00															
02	2					D	2600086	D	ANGLE, AL. ALY. EXTRD	6063-T5	2600086-002													
									QQ-A-274 .75×.75×.12×.31.75															
03	1					D	2600086	D	ANGLE, AL. ALY EXTRD.	6063-T5	2600086-003													
									QQ-A-274 .50×.75×.12×17.00															
04																								
05																								
05	1					D	1635594	A	PANEL, TOP		1635594													
06	1					D	1635597	C	PANEL, LEFT SIDE		1635597													
07	1					D	2635593	C	PANEL, BACK, ASS'Y		2635593													
00																								
01	1					D	2635593	C	PANEL, BACK		2635593													
02	6								*6-32 CSK. HD. RIVNUT	A6-106	1700037													
03	2								*6-32 PRESSNUT	S632 2	1700029													
04																								

NOTES

P/L 2635601

PL 2635601 REV ____ SHT 4 OF 13
DESCRIPTION TOP ASSY 5900 CHAMBER
NEXT ASSY END ITEM BY ARL CK'D ____ APPD ____

REV ECN DATE BY APP

DELTA DESIGN
5725 KEARNY VILLA RD
SAN DIEGO, CALIF

JOB NO ____ S O NO ____
QTY ____ PROM DATE ____ ACT ____
RUN * ____ MACH ____

ITEM NO	ASSY B QTY -001	-002	-003	-004	INDENTURE	SIZE	DRAWING NO	REV	DESCRIPTION	MFG OR MFG NO	STOCK OR PART NO	JOB QTY	ALL	QTY REQ	FAB CD	PURCHASING PO NO	QTY DUE REC	MANUFACTURE ACT STD HRS	EST ACT COM	PLATE PAINT IN	OUT	AREA
05																						
08	1				D	2635596	C	PANEL ASS'Y., RIGHT SIDE		2635596											
00																						
01	1				D	2635596	C	PANEL .06 AL, ALY. SHT, FINE BARK TEXT.	3003-H14	2635596-001											
02	8							*6-32 CSK. HD. RIVNUT	B.F. GOODRICH A6-106	1700037											
03	2							*8-32 CSK. HD. RIVNUT	B.F. GOODRICH A8-106	1700005											
04																						
05																						
09	1				B	1640309		WELD ASS'Y, TUBE GUIDE		1640309-001											
00																						
01	1				B	1640309		PLATE 1.25×1.25×.032	302-304 SST	1640309-101											
02	1				B	1640309		TUBE .50 OD.×.028 WALL×1.0016 (WELDED & DRAWN TUBING)	302-304 SST	1640309-102											
03																						
10	1				A	1602968	D	GASKET, VENT		2400063											
11	1				A	1602967	D	OUTER PLATE, VENT		1500553											
~~12~~	~~1~~				~~A~~	~~1634770~~		~~PANEL, TUBE RETAINER~~		~~1634770~~											
~~13~~	~~1~~				~~A~~	~~1694772~~		~~GASKET, TUBE~~		~~1694772~~											
14	1				A	1600076	B	BUSHING, THERMOMETER		1600076											
15	2				C	1635600		PLATE, COVER		1635600-002											
16	2				C	1635600		PLATE, COVER		1635600-001											
17	2				B	2622524		HEATER ASS'Y.		2622524-001											
00																						
00																						
01	1				B	1635874		SHEET, HEATER		1635874											
02	4				B	1635868		STANDOFF, HEATER		1635868											
03	2							INSULATOR, CERAMIC	BIRNBACH *458	1500327											
↵	2				B	2635875		ELEMENT 8.75 Ω		2635875-001											
00																						
00																						
01	1				B	2635875		ELEMENT, HEATER 8.75 Ω	LYON-RURAL ELECT.	2200003											
02	2						2	STUD	BIRNBACH *458	15000327											

NOTES 2 ITEMS 2 & 3 (SHEET 5) ARE SEPARATED FROM STOCK ITEM 15000327, AND SUPPLIED TO VENDOR REMAINING ITEMS ARE RESHELVED.

P/L 2635601

PL 2635601 REV ____ SHT 5 OF 13
DESCRIPTION TOP ASS'Y 5900 CHAMBER
NEXT ASSY END ITEM BY ____ CK'D ____ APPD ____

REV ECN DATE BY APP

DELTA DESIGN
5725 KEARNY VILLA RD
SAN DIEGO, CALIF

JOB NO ____ S O NO ____
QTY ____ PROM DATE ____ ACT ____
RUN * ____ MACH ____

ITEM NO	ASSY & QTY -001	-002	-003	-004	INDENTURE	SIZE	DRAWING NO.	REV	DESCRIPTION	MFG OR MFG NO	STOCK OR PART NO.	JOB QTY	AUL	QTY REC	FAB CD	PURCHASING PO NO	QTY DUE	REC'D	MANUFACTURE ACT EST HRS	ACT ACT COM	COM	PLATE/ PAINT IN	OUT	AREA
03	2						(SEE SHT. 4) (2)		NUT	BIRNBACH #458	1500327													
04																								
05																								
05	4					A	1635867	B	GASKET, INSULATOR		1635867													
06																								
07																								
08																								
18	1					B	2635055		~~SIGNAL PANEL ASS'Y.~~		~~2635055~~													
19	1					C	2635058		~~POWER PLANE ASS'Y.~~	115 VAC	~~2635058~~													
20	1					A	2635264	A	CABLE ASS'Y. (W1)		2635264-003													
00																								
01	A/R								WIRE 18 AWG	COHU STOCK	7700618-999													
02	6								SOLDERLESS TERMINAL	(SPADE)	1500055													
03																								
21	1					A	2635265		CABLE ASS'Y. (W2)		2635265-003													
00																								
01	A/R								WIRE 14 AWG	COHU STOCK	7700614-999													
02	A/R								WIRE 18 AWG	COHU STOCK	7700618-999													
03	8								SOLDERLESS TERMINAL	(SPADE)	1500055													
04	2								SOLDERLESS TERMINAL	(SPADE)	1500054													
05																								
06																								
22	1					A	2635607	A	CABLE ASS'Y. (W3)		2635607-001													
00																								
01	A/R								WIRE 14 AWG (TEFLON)		1500380													
02	A/R								WIRE 14 AWG		7700604-999													
03	A/R								WIRE 18 AWG (TEFLON)	COHU STOCK	1500387													
04	A/R								WIRE 18 AWG		7700618-999													
05	2								SOLDERLESS TERMINAL	(SPADE) COHU STK.	1500055													
06	4								SOLDERLESS TERMINAL	(SPADE)	1500054													
07	3								SOLDERLESS TERMINAL	(RING)	1500062													
08																								
09																								

NOTES

P/L 2635601

PL 2635601 REV ____ SHT 6 OF 13
DESCRIPTION TOP ASSY 5900 CHAMBER
NEXT ASSY END ITEM BY ____ CK'D ____ APPD ____

REV ECN DATE BY APP

DELTA DESIGN
5725 KEARNY VILLA RD
SAN DIEGO, CALIF

JOB NO ____ S.O NO ____
QTY ____ PROM DATE ____ ACT ____
RUN * ____ MACH ____

ITEM NO	ASSY QTY -001	-002	-003	-004	INDENTURE	SIZE	DRAWING NO.	REV	DESCRIPTION	MFG OR MFG NO	STOCK OR PART NO	JOB QTY	AUL	QTY REC	FAB CD	PURCHASING P.O. NO	QTY	DUE REC	MANUFACTURE ACT STD	EST HRS	ACT COM	PLATE/PAINT IN	OUT	AREA
10																								
23	1					B	2618016	F	CO_2 ASS'Y. SINGLE STEM	(3)	2618016-004													
00																								
00																								
~~01~~	~~1~~					~~B~~	~~2618005~~		~~CO_2 VALVE WELDMENT ASS'Y.~~		~~2618005-001~~													
02	1					B	1647840		INJECTOR ASS'Y, CO_2 SINGLE		1647840-006													
00																								
~~01~~	~~1~~					~~C~~	~~1618012~~	~~B~~	~~MOD., PIPE PLUG~~	~~1618012-002~~	~~MF 3600038~~													
01	1								FITTINGS, INJECTOR		3600197													
02	1					B	1647841		TUBE, CO_2 INJECTOR	TYPE 300 SS .022 I.D. 1/8 O.D	1647841-107													
~~03~~	~~1~~					~~B~~	~~1618006~~	~~B~~	~~TIP, CO_2 INJECTOR~~	~~1618006-001~~	~~4100099~~													
04																								
03	A/R								INSULATION	PRESSTITE TYPE 5	2400026													
04	1					B	1647407		CO_2 VALVE & BRACKET ASS'Y.	MULTI-USAGE	1647407-001													
24	2					B	2632196	D	CAN ASS'Y.	(MULTI-USAGE)	2632196-003													
00																								
~~01~~	~~1~~					~~B~~	~~1692950~~	~~C~~	~~CAN~~		~~1692950-003~~													
02																								
03																								
~~04~~	~~2~~					~~A~~	~~1631838~~	~~A~~	~~TAB~~		~~1631838~~													
~~05~~	~~1~~								~~GROMMET~~		~~1500026~~													
06																								

NOTES: (3) CO_2 PSI OPTIONAL PER CUSTOMER PREFERENCE

P/L 2635601

PL 2635601 REV — SHT 7 OF 13
DESCRIPTION TOP ASS'Y 5900 CHAMBER
NEXT ASSY END ITEM BY — CK'D — APPD —

REV ECN DATE BY APP

DELTA DESIGN
5725 KEARNY VILLA RD
SAN DIEGO, CALIF

JOB NO — S O NO —
QTY — PROM DATE — ACT —
RUN * — MACH —

ITEM NO	ASSY & QTY -001	-002	-003	-004	INDENTURE	SIZE	DRAWING NO	REV	DESCRIPTION	MFG OR MFG NO	STOCK OR PART NO.	JOB QTY	ALL	QTY REC	FAB CD	PURCHASING PO NO	QTY	DUE	REC	MANUFACTURE ACT STD HRS	EST ACT COM	ACT COM	PLATE/PAINT IN	OUT	AREA
07																									
25	2					D	2621007	A	BLOWER MOTOR ASSY.	MULTI-USAGE	2621007														
26	1					B	2602503	C	FAILSAFE (THERMOSWITCH)		2300004														
00																									
01	1								THERMOSTAT	VULCAN 1DIC2-4	2300004														
02	1					A	1600007	C	BRACKET		1600007														
03																									
27	1					A	1634343	B	PANEL, FAILSAFE ACCESS		1634343														
28	1					D	2635599	D	PARTITION ASS'Y.		2635599														
00																									
03	REF					L	1635611	A	SILK SCREEN MASTER		1635611														
01						D	2635599	D	PANEL .06 THK. AL. ALY.		2635599-001														
									3003-H14 FINEBARK TEXT.																
02	9								*6-32 FLAT HD. RIVNUT	B.F. GOODRICH A6-75	1700036														
03	4								*8-32 FLAT HD. RIVNUT	B.F. GOODRICH AB-75	1700006														
04																									
~~29~~	~~1~~					A	~~1636422~~		~~LABEL, PRESSURE SENSITIVE~~		~~1636422~~														
30	2					B	1648659		SUPPORT BLOCK - INNER	UNER, 3100 & 5900	1648659-101														

NOTES

P/L 2635601

PL 2635601 REV ___ SHT 8 OF 13

DESCRIPTION TOP ASS'Y 5900

NEXT ASSY END ITEM BY ___ CK'D ___ APPD ___

REV ECN DATE BY APP

DELTA DESIGN
5725 KEARNY VILLA RD
SAN DIEGO, CALIF

JOB NO ___ S O NO ___
QTY ___ PROM DATE ___ ACT ___
RUN * ___ MACH ___

ITEM NO	ASSY B QTY -001	-002	-003	-004	INDENTURE	SIZE	DRAWING NO.	REV.	DESCRIPTION	MFG OR MFG NO	STOCK OR PART NO	JOB QTY	ALL	QTY REC	FAB CD	PURCHASING PO NO	QTY	DUE	MANUFACTURE ACT REC	EST STD HRS	ACT COM	EST COM	PLATE/PAINT IN	OUT	AREA
31	1					B	~~2618017~~	A	~~CO_2 ASS'Y, DUAL ITEM~~		~~2618017-004~~														
00																									
01	1					B	~~2618005~~		~~CO_2 VALVE WELDMENT ASS'Y.~~		~~2618005-002~~														
02	1					B	~~2618003~~		~~INJECTOR ASS'Y, CO_2 SINGLE ITEM~~		~~2618003-000~~														
00																									
01	1					C	~~1618012~~	B	~~MOD., PIPE PLUG~~	~~1618012-001~~	~~M/P 3600010~~														
02	1					B	~~1618011~~	E	~~TUBE, CO_2 INJECTOR~~		~~1618011-013~~														
03	1					B	~~1618011~~	E	~~TUBE, CO_2 INJECTOR~~		~~1618011-011~~														
04	1					B	~~1618006~~	B	~~TIP, CO_2 INJECTOR~~		~~4100040~~														
05																									
06																									
03	~~AR~~								~~INSULATION~~	~~PRESSTITE TYPE 5~~	~~2400026~~														
04	1					B	1647407		CO_2 VALVE & BRACKET ASS'Y		1647407-002														
00																									
01																									
02	1					B	~~1645008~~		~~BRACKET, CO_2~~		~~1645008-101~~														
03	1								~~NIPPLE, BRASS 1/8 NPT×2.00~~		~~3601038~~														
04	1								~~COUPLING 1/8 NPT~~		~~3600102~~														
05	4								~~* 8-32×3/8 PHP-MS~~		~~6802323-004~~														
06	4								~~* 8 SPLIT LOCKWASHER~~		~~6608010~~														
07	4								~~* 8-32 HEX NUT~~		~~6708320-000~~														
08	1								~~SOLENOID VALVE (300 P.S.I.)~~		~~1800105~~														
09																									
10																									
32	1					B	1643368	A	GUIDE TUBE, VENT		1643368														
33	1					B	1643369		GASKET, TUBE		1643369														
34																									
35																									
36																									
37																									
38	AR								1/2" W SILICONE RUBBER STRIP		2400007														
39	1					A	1600012	C	NULL TERMINAL COVER		1600012														
40	2					A	1635610		SPACER		1635610														

NOTES: ⚠ ~~USED ON 300 P.S.I. ONLY (OPTION)~~

P/L 2635601

PL 2635601 REV ____ SHT 9 OF 13

DESCRIPTION TOP ASS'Y 5900 CHAMBER

NEXT ASSY END ITEM BY Aranack'D ____ APPD ____

REV	ECN	DATE	BY	APP

DELTA DESIGN
5725 KEARNY VILLA RD
SAN DIEGO, CALIF

JOB NO ____ S O NO ____
QTY ____ PROM DATE ____ ACT ____
RUN * ____ MACH ____

ITEM NO	ASSY & QTY -001	-002	-003	-004	INDENTURE	SIZE	DRAWING NO	REV	DESCRIPTION	MFG OR MFG NO	STOCK OR PART NO.	JOB QTY	ALL	QTY REC	FAB CD	PURCHASING P.O. NO	QTY	DUE	REC	MANUFACTURE ACT STD HRS	EST ACT COM	COM	PLATE/PAINT IN	OUT	AREA
41	1								THERMOMETER, 5"		2300010														
42	AR								INSULATION, FIBERGLASS		2400025														
43	AR								.06 x 1/2 SILICONE RUBBER STRIP		2400126														
44	4								FOOT, RUBBER		1500419														
45	2								LATCH KEEPER		4100051														
46	AR								SHIM, LATCH KEEPER		1600091														
47	1								LAMP, NEON (DS1)		1400082														
48	1								PROBE, LONG		2300031														
~~49~~	~~1~~								~~CONVENIENCE OUTLET~~	~~WABER #3017~~	~~1500083~~														
50	2								3/8" HOLE PLUG		3600079														
51	1								1/2" HOLE PLUG		3600081														
52	1								3/4" HOLE PLUG		3600080														
53	10								WIRE NUT, SMALL (E1-E10)		1500028														
54	1								RELAY (K1)	POTTER BRUMFIELD PR7AY	1400218														
~~55~~	~~1~~								~~FUSE 15A (F1)~~		~~1400037~~														
56	1								CAPACITOR (C1)		0700520-400														
57	1								TERMINAL BLOCK (TB1)		1400572														
58	2								GROMMET, 1/2"		1500028														
59	8								SPACER, 1/2 LG.		4100093														
60	AR								RTV-106 (RED)		2400003														
61	1								CLAMP, CABLE 3/16"		1500001														
62	4								CLAMP, CABLE 3/8"		1500002														
63																									
64	3								* 6-32 x 3/4 PHP-MS		6806323-404														
65	8								* 6 x 1/2 PHP-SMS		6906126-400														
66	1								* 10-32 x 3/4 PHP-MS		6810323-404														
67	4								* 10 FLAT WASHER		661000-000														
68	2								* 10-32 HEX NUT		6710320-000														
69	2								* 10 SPLIT LOCKWASHER		6610010-000														
70	1						C	2618020		SHIP KIT		2618020-001														
00																									
01	1									HOSE		3600123													
02	1									STRAINER		1400110													

NOTES: ⚠ USE ONLY AS REQ'D. TO OPTIMIZE SEAL

⚠ TO BE SHIPPED WITH CHAMBER

P/L 2635601

PL 2635601 REV ____ SHT 10 OF 13
DESCRIPTION TOP ASS'Y (5900)
NEXT ASSY END ITEM BY ARXXX1 CK'D ____ APPD ____

REV ECN DATE BY APP

DELTA DESIGN
5725 KEARNY VILLA RD
SAN DIEGO, CALIF

JOB NO ____ S.O NO ____
QTY ____ PROM DATE ____ ACT ____
RUN * ____ MACH ____

ITEM NO	ASSY & QTY -001	-002	-003	-004	INDENTURE	SIZE	DRAWING NO	REV	DESCRIPTION	MFG OR MFG NO	STOCK OR PART NO	JOB QTY	AUL	QTY REC	FAB CD	PURCHASING P.O NO	QTY	DUE	REC	MANUFACTURE STD HRS	ACT EST	ACT COM	COM	PLATE/PAINT IN	OUT	AREA
03	1								NUT		3600120															
04	1								SLEEVE		3600121															
05	1								CONNECTOR		3600004															
06	1								CONNECTOR		3600119															
07	1								WASHER		3600122															
08																										
09																										
10																										
71	4								* 6 × 5/8 PHP-SMS		6906582400															
72	17								* 6-32 × 1/2 PHP-MS		6806321-224															
73	38								* 6 × 1/2 PHP-SMS		6906122-400															
74	4								* 8-32 × 1/2 PHP-MS		6808321-224															
75	8								* 8-32 × 1" PHP-SMS		6908320-124															
76	4								* 1/4-20 × 3/4 PHP-MS		6814203-424															
77	16								* 6 × 1/2 FHP-SMS		6906122-100															
78	15								* 8 × 1/2 OHP-SMS		6908122-200															
79	2								* 4 × 1/2 FHP-SMS		6904122-100															
80	8								* 4 × 3/8 PHP-SMS		6904382-400															
81	4								* 10-32 × 1 1/2 PHP-MS		6810323-224															
82	4								* 8 × 1/2 PHP-SMS		6908122-400															
83	2								* 8-32 × 1/2 OHP-MS		6808321-222															
84	6								* 6-32 × 1/4 PHP-MS		6806321-424															
85																										
86																										
87																										
88	19								* 6 SPLIT LOCKWASHER		6606012															
89	4								* 8 SPLIT LOCKWASHER		6608012															
90	8								* 10 SPLIT LOCKWASHER		6601012															
91	4								* 10 FLAT WASHER		6601002															
92																										
93	18								* 6-32 HEX NUT		6706322															
94																										
95																										

NOTES

P/L 2635601

PL 2635601 REV ____ SHT 11 OF 13
DESCRIPTION TOP ASSY 5900 CHAMBER
NEXT ASSY END ITEM BY ____ CK'D ____ APPD ____

REV ECN DATE BY APP

DELTA DESIGN
5725 KEARNY VILLA RD
SAN DIEGO, CALIF

JOB NO ____ S.O NO ____
QTY ____ PROM DATE ____ ACT ____
RUN * ____ MACH ____

ITEM NO	ASSY & QTY -001	-002	-003	-004	INDENTURE	SIZE	DRAWING NO	REV	DESCRIPTION	MFG OR MFG NO	STOCK OR PART NO	JOB QTY	AUL	QTY REC	FAB CD	PURCHASING P.O NO	QTY DUE	REC'D	MANUFACTURE ACT STD HRS	EST ACT COM	COM	PLATE/PAINT IN	OUT	AREA
96	7								CABLE TIE		1500013													
97	8								PUSHMOUNT		1500014													
98																								
99																								
100	1								SOLDERLESS TERMINAL, RECEPT.		1500055													
101	2								SOLDERLESS TERMINAL, RECEPT.		1500047													
102	1								SOLDERLESS TERMINAL, RING		1500056													
103	1								SOLDERLESS TERMINAL, RING		1500071													
104	1								SOLDERLESS TERMINAL, RECEPT.		1500066													
105	7								SOLDERLESS TERMINAL, RING		1500062													
106																								
107																								
108																								
109																								
110	A/R								~~WIRE, 14 AWG (TEFLON)~~															
111	A/R								WIRE, 14 AWG		7700614-999													
112	A/R								WIRE, 18 AWG		7700618-999													
113	A/R								WIRE, 18 AWG (TEFLON)		1500387													
114	A/R								WIRE, 12 AWG (TEFLON)		1500376													
115																								
116																								
117	1								SOCKET (J1)		2000044													
118	1								TERMINAL BLOCK (TB2)		1400503													
119	1								CIRCUIT BREAKER (CB1)	240V. AM2-A3-A-152	1400002													
120	1								~~PLUG (PB)~~		~~2000409~~													
121	2					A	2635048		CAPACITOR, MOD (C2,C3)		2635048													
00																								
01	1								CAPACITOR		0800007													
02	1								SWAGE NUT		1700029													
03																								
122	1								STRAIN RELIEF		1500077													
123	8.5 FT								POWER CORD		1500465													
124	1								POWER PLUG, 240V PL		2000224													

NOTES ⚠ INDICATED ON SHT. 6 OF DWG

P/L 2635601

PL 2635601 REV ____ SHT 12 OF 13
DESCRIPTION TOP ASSY (5900)
NEXT ASSY END ITEM BY Atsma CK'D ____ APPD ____

REV ECN DATE BY APP

DELTA DESIGN
5725 KEARNY VILLA RD
SAN DIEGO, CALIF

JOB NO ____ S.O NO ____
QTY ____ PROM DATE ____ ACT ____
RUN * ____ MACH ____

ITEM NO	ASSY B QTY -001	-002	-003	-004	INDENTURE	STYLE	DRAWING NO.	REV	DESCRIPTION	MFG OR MFG NO	STOCK OR PART NO.	JOB QTY	AUL	QTY REC	FAB CO	PURCHASING PO NO	QTY DUE	REC'D	MANUFACTURE ACT EST	ACT STD HRS	COM	COM	PLATE/PAINT IN	OUT	AREA
125	4								SOLDERLESS TERMINAL, RING		1500071													
126	1								SOLDERLESS TERMINAL, RING		1500056													
127	1								CIRCUIT BREAKER-120V (CB1)	AM2-A3-A20-3	1400008													
128	A/R								WIRE, 12 AWG HIGH TEMP	12958/U853LGS-1	1501414													
129	1								POWER PLUG, 125V P1		2000135													
130	1					B	2618015	C	CO_2 ASSY (300 PSI) SINGLE STEM	⚠	2618015-004													
00																								
01	1					B	~~2618005~~		~~CO_2 VALVE WELDMENT ASSY~~		~~2618005-002~~													
02	1					B	1647840		INJECTOR ASSY, CO_2 SINGLE STEM		1647840-005													
00																								
01	1								FITTINGS, INJECTOR		3600197													
02	1					B	1647842		TUBE, CO_2 INJECTOR	TYPE 300 SS 1/8 O.D. .035 WALL	1647842-107													
03																								
03	A/R								INSULATION	PRESSTITE TYPE S	2900026													
04	1					B	1647407		CO_2 VALVE + BRACKET ASSY	MULTI-USAGE	1647407-002													
131	1					B	2600409		PLUG MOD. P2		2600409-001													
01	1								PLUG 4 PIN AUDIO	AMPHENOL 91 MC4M	2000051													
02	1								CHAIN, 4"		1500226													
03	2								#6 EYELET		3600101													
04	1								#2-56 x 5/32 PHP-MS															
05	A/R								WIRE, 20 GA BUS															
06	1					C	1647222		#2 FLAT WASHER, LN_2 INSTALLATION ~~MOD #1 ONLY~~		6602000000 ~~1647222-008~~													

NOTES ⚠ CO_2 PSI OPTIONAL PER CUSTOMER PREFERENCE

P/L 2635601

PL 2635601 REV ____ SHT 13 OF 13
DESCRIPTION TOP ASSY 5900 CHAMBER
NEXT ASSY END ITEM BY E.I.D. CK'D ____ APPD ____

REV	ECN	DATE	BY	APP

DELTA DESIGN
5725 KEARNY VILLA RD
SAN DIEGO, CALIF

JOB NO ____ S O NO ____
QTY ____ PROM DATE ____ ACT ____
RUN * ____ MACH ____

ITEM NO	ASSY B QTY -001	-002	-003	-004	INDENTURE	SIZE	DRAWING NO.	REV	DESCRIPTION	MFG OR MFG NO	STOCK OR PART NO.	JOB QTY	ALL	QTY REC	FAB CD	PURCHASING PO NO	QTY	DUE	REC	MANUFACTURE ACT STD	EST HRS	ACT COM	COM	PLATE/PAINT IN	OUT	AREA
132	1					B	1650205		COVER, CUTOUT		1650205-101															
133																										
134																										
135	2								#4-40 X 3/8 PHP-MS		6804403-804															
136	2								#4 SPLIT LOCK WASHER		6604010															
137	2								#4-40 HEX NUT		6704400-001															
138																										
139																										
140																										
141																										
142																										
143	REF					D	1650241		CHAMBER - TYPE V CONTROLR	RETROFIT (8)	1650241-001															
00																										
01	REF					D	1650223		INTERCONNECT ASSY TYPE V CONTROLR w/IEEE-488	(8)	1650223-001															

NOTES: (8) THESE DWGS & P/L'S TOGETHER MAKE UP THE RETROFIT KIT

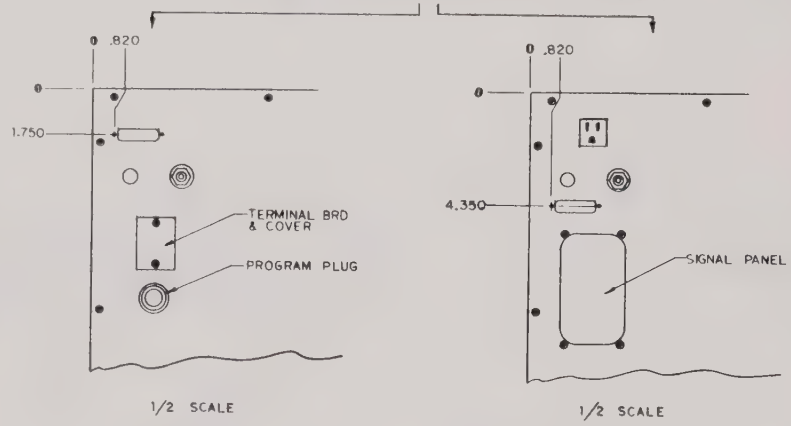
P/L 2635601

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE	APPD

— INSTRUCTIONS FOR CHAMBER RETROFIT —
TYPE V CONTROLLER

1. REMOVE CHAMBER RIGHT SIDE PANEL TO ALLOW ACCESS TO CONTROLLER & PROBE GUIDE TUBE. ON MODELS 2850, 5900 & 7650 TOP PANEL MUST BE REMOVED AS WELL
2. REMOVE EXISTING CONTROLLER & ITS PROBE. DO NOT DESTROY BLACK PRESS-TITE
3. NOTE CHAMBER REAR PANEL CONFIGURATION & DECIDE WHICH MEANS OF MOUNTING THE REMOTE INTERFACE CABLE ASSY. PLUG BEST SUITS YOUR CHAMBER & REQUIREMENTS →
4. MAKE THE REAR PANEL MODIFICATIONS
5. MOUNT THE REMOTE INTERFACE CABLE ASSY PLUG TO THE REAR PANEL— SEE DRAWING D1650223 & PARTS LIST FOR CABLE & HARDWARE CALLOUTS
6. INSERT THERMOCOUPLE ASSY IN PROBE GUIDE TUBE & SECURE IN PLACE USING BLACK PRESS-TITE — SEE DRAWING D1650223 — CAUTION — DO NOT SHORTEN THERMOCOUPLE ASSY WIRE FOR ANY REASON
7. INSTALL TYPE V CONTROLLER & WIRE PER WIRING DIAGRAM D1643470 OR D1643471 SHEET 2 OF 2. IF NECESSARY, COIL EXCESS THERMOCOUPLE WIRE & POSITION IT BETWEEN CONTROLLER & CHAMBER TO ACT AS A SERVICE LOOP IF NEEDED
8. REPLACE TOP PANEL IF YOU HAVE A MODEL 2850, 5900 OR 7650
9. BEFORE REPLACING SIDE PANEL SEE CONTROLLER MANUAL FOR SET UP & CALIBRATION PROCEDURES
10. CALIBRATE CONTROLLER
11. REPLACE SIDE PANEL

IF YOUR MODEL 5900 CHAMBER REAR PANEL LOOKS LIKE THIS
MODIFY BY ADDING CUTOUT AT DIMENSIONS SHOWN



1. REMOTE INTERFACE CABLE ASSY PLUG CUTOUT DIMENSIONS

⚠ FINISH (IF APPLICABLE)

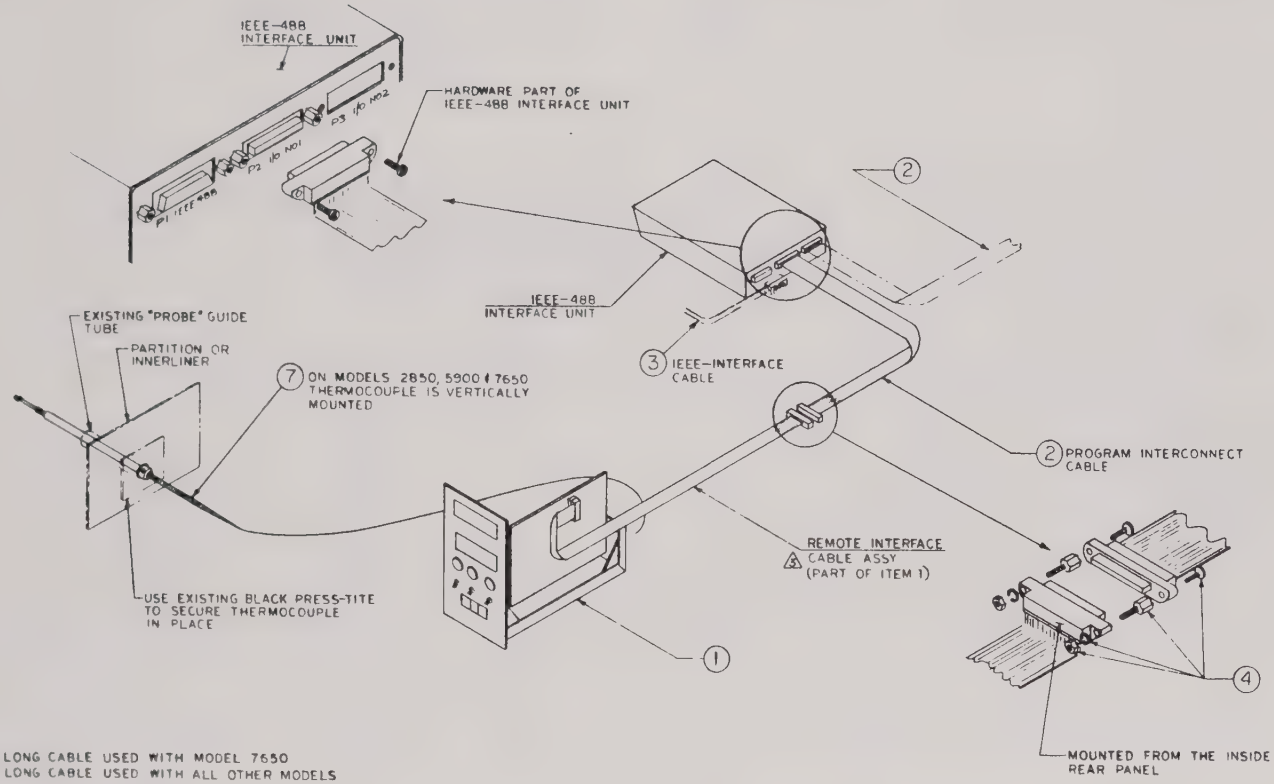
⚠ MATL (IF APPLICABLE)

NOTES: UNLESS OTHERWISE SPECIFIED

		DESIGN ACTIVITY M1959	DELTA DESIGN INC.
		DRAFTED OLEJNIK 1/4/80	TITLE: CHAMBER, TYPE V CONTROLLER RETROFIT
		CHECKED	
		APPROV	
		RELEASE	SIZE D — 1650241
7435601	5900	MATERIAL	
DO NOT SCALE DRAWING		FINISH	SCALE — SHEET 1 OF 1

BLUE CARD

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE	APPD



⚠ 36" LONG CABLE USED WITH MODEL 7650
28" LONG CABLE USED WITH ALL OTHER MODELS

⚠ FINISH (IF APPLICABLE)

⚠ MATL (IF APPLICABLE)

NOTES: UNLESS OTHERWISE SPECIFIED

	-	1635573	1650								
	-	1636342	5400								
	-	1635661	5900								
	-	1636EF3	7900								
		1635402	7900								
		1605100	2350								
QUANTITY		NEXT ASSY	USED ON	SERIAL NO	DATE APP	ENGR APP	MATERIAL ⚠				
APPLICATION				EFFECTIVITY			FINISH ⚠				

DESIGN	
DRAFTED	OLE JWE 11 89
CHECKED	
APPROV	
RELEASE	
DO NOT SCALE DWG	

DELTA DESIGN INC.

TITLE: INTERCONNECT ASSY. TYPE V CONTROLLER WITH IEEE-488

SIZE	DWG NO	REV
D	1650223	

SCALE

PL 1650223 REV ____ SHT 1 OF 1

DESCRIPTION INTERCONNECT ASSY TYPE V CONTROLLER WITH IEEE-488

NEXT ASSY MULTI-USAGE BY E.J.O. CK'D ____ APPD ____

REV	ECN	DATE	BY	APP

DELTA DESIGN
5725 KEARNY VILLA RD
SAN DIEGO, CALIF

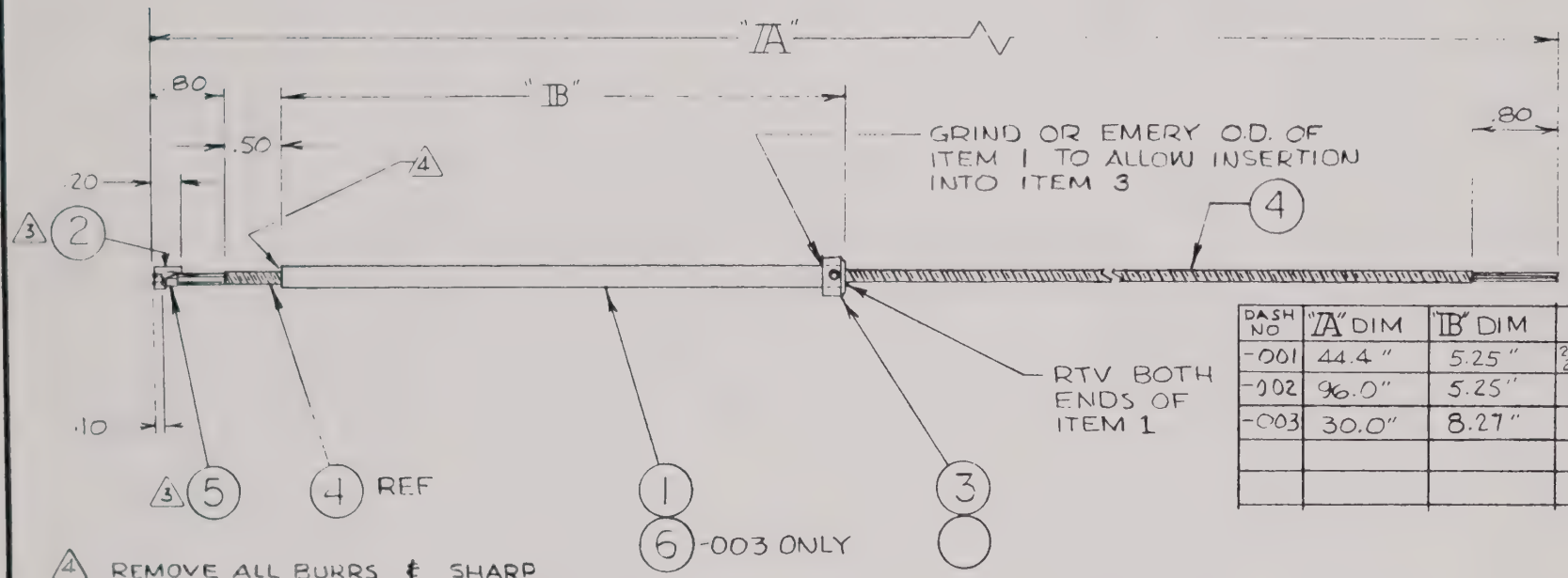
JOB NO ____ S.O NO ____
QTY ____ PROM DATE ____ ACT ____
RUN * ____ MACH ____

ITEM NO	ASSY & QTY -001	-002	-003	-004	INDENTURE	SIZE	DRAWING NO	REV	DESCRIPTION	MFG OR MFG NO	STOCK OR PART NO	JOB QTY	ALL	QTY REC	FAB CD	PURCHASING P.O. NO	QTY DUE	REC	MANUFACTURE ACT STD HRS	EST ACT COM	COM	PLATE/PAINT IN	OUT	AREA
00	X					D	1650223		INTERCONNECT ASSY- TYPE V CONTROLLER WITH IEEE-488	V CONTROLLER	1650223-001													
00																								
00																								
00																								
00																								
00																								
00																								
01	REF					D	1650160		TYPE V CONTROLLER		1650160-001													
02	1								PROGRAM INTERCONNECT CABLE															
03	1								IEEE-488 INTERFACE CABLE															
04	1								JACK SOCKET ASSY.	ANSLEY #609-003	1700324													
05																								
06																								
07	1					B	1650230		THERMOCOUPLE ASSY	MULTI-USAGE	1650230-001													

NOTES.

1650223
P/L

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPD
	A	PER ECN M[illegible]		



DASH NO	"A" DIM	"B" DIM	USED ON
-001	44.4"	5.25"	2300 THRU 7650, 2850A
-002	96.0"	5.25"	8000
-003	30.0"	8.27"	2300A

4 REMOVE ALL BURRS & SHARP EDGES FROM I.D. OF ITEM 1 (BOTH ENDS)

3 INSURE ITEM 5 IS SOLIDLY CRIMPED OVER ITEM 4 — THEN ITEM 2 IS CRIMPED OVER ITEM 5

4 FINISH (IF APPLICABLE)

3 MATL (IF APPLICABLE)

NOTES: UNLESS OTHERWISE SPECIFIED

DASH	QTY	NEXT ASSY	USED ON
003	1	MULTI-USAGE	
002	1	1650223	8000
001	1	1650223	

APPLICATION

SERIAL NO. | DATE EFF | DWG REV

EFFECTIVITY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS .XX ± .03 .XXX ± .010
ANGLES 0° 30'
HOLE TOLERANCES

MATERIAL 4
FINISH 4

ENGINEERING ACTIVITY M1952

DESIGN	
DRAFTED	OLEJNIK 12/6/73
CHECKED	
APPROV	
RELEASE	

DO NOT SCALE DWG

DELTA DESIGN INC.
A SUBSIDIARY OF CONTROL DATA CORP.
SAN DIEGO, CA. 92123

TITLE: THERMOCOUPLE ASSY.

SIZE B | CODE IDENT | 1650230

SCALE | SHEET 1 OF 1

PL 1650230 REV ____ SHT 1 OF 1

DESCRIPTION THERMOCOUPLE ASSY.

NEXT ASSY MULTI USAGE BY F.J.O. CK'D ____ APPD ____

REV	ECN	DATE	BY	APP

DELTA DESIGN
5725 KEARNY VILLA RD
SAN DIEGO, CALIF

JOB NO. ____ S.O. NO ____
QTY ____ PROM DATE ____ ACT ____
RUN * ____ MACH ____

ITEM NO	ASSY & QTY -001	-002	-003	-004	INDENTURE	SIZE	DRAWING NO.	REV	DESCRIPTION	MFG OR MFG NO	STOCK OR PART NO.	JOB QTY	ALL	QTY REC	FAB CD	PURCHASING P.O. NO	QTY	DUE	REC	MANUFACTURE ACT STD HRS	EST ACT COM	ACT COM	PLATE/PAINT IN	OUT	AREA
00	X					B	1650230		THERMOCOUPLE ASSY.		1650230-001														
00		X				B	1650230		THERMOCOUPLE ASSY		1650230-002														
00			X			B	1650230		THERMOCOUPLE ASSY		1650230-003														
00																									
00																									
00																									
00																									
01	1	1				B	1650230		TUBE, ALUMINUM		1650230-101														
									3/16 O.D. X .022 WALL X 5 1/4 LONG																
02	1	1	1			B	1650230		TUBE, ALUMINUM		1650230-102														
									3/16 O.D. X .022 WALL X .20 LONG																
03	1	1	1						COLLAR, SET SCREW	BERG # CSS	1700292														
04	4'								WIRE, THERMOCOUPLE	IRON CONSTANTAN	1501375														
		8'							" "	" "	1501375														
			30"						" "	" "	1501375														
05	1	1	1						QUIKTIP	# 128543	1700327														
06			1				B1650230		TUBE, ALUMINUM		1650230-103														
									3/16 O.D. X .022 WALL X 8.27" LONG																

NOTES:

P/L 1650230

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